2' Topog

3

FIELD BOOK

361S

W90

Tables for Excavations and Embankments.

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.
ROADWAY 18 FEET WIDE. SIDE SLOPES 1 TO 1.
FOR SINGLE TRACK EXCAVATION.

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	9.0	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	0
1	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9	1
2	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7	11.8	11.9	2
3	12.0	12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	12.9	3
4	13.0	13.1	13.2	13.3	13.4	13.5	13.6	13.7	13.8	13.9	4
5	14.0	14.1	14.2	14.3	14.4	14.5	14.6	14.7	14.8	14.9	5
6	15.0	15.1	15.2	15.3	15.4	15.5	15.6	15.7	15.8	15.9	6
7	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8	16.9	7
8	17.0	17.1	17.2	17.3	17.4	17.5	17.6	17.7	17.8	17.9	8
9	18.0	18.1	18.2	18.3	18.4	18.5	18.6	18.7	18.8	18.9	9
10	19.0	19.1	19.2	19.3	19.4	19.5	19.6	19.7	19.8	19.9	10
11	20.0	20.1	20.2	20.3	20.4	20.5	20.6	20.7	20.8	20.9	11
12	21.0	21.1	21.2	21.3	21.4	21.5	21.6	21.7	21.8	21.9	12
13	22.0	22.1	22.2	22.3	22.4	22.5	22.6	22.7	22.8	22.9	13
14	23.0	23.1	23.2	23.3	23.4	23.5	23.6	23.7	23.8	23.9	14
15	24.0	24.1	24.2	24.3	24.4	24.5	24.6	24.7	24.8	24.9	15
16	25.0	25.1	25.2	25.3	25.4	25.5	25.6	25.7	25.8	25.9	16
17	26.0	26.1	26.2	26.3	26.4	26.5	26.6	26.7	26.8	26.9	17
18	27.0	27.1	27.2	27.3	27.4	27.5	27.6	27.7	27.8	27.9	18
19	28.0	28.1	28.2	28.3	28.4	28.5	28.6	28.7	28.8	28.9	19
20	29.0	29.1	29.2	29.3	29.4	29.5	29.6	29.7	29.8	29.9	20
21	30.0	30.1	30.2	30.3	30.4	30.5	30.6	30.7	30.8	30.9	21
22	31.0	31.1	31.2	31.3	31.4	31.5	31.6	31.7	31.8	31.9	22
23	32.0	32.1	32.2	32.3	32.4	32.5	32.6	32.7	32.8	32.9	23
24	33.0	33.1	33.2	33.3	33.4	33.5	33.6	33.7	33.8	33.9	24
25	34.0	34.1	34.2	34.3	34.4	34.5	34.6	34.7	34.8	34.9	25
26	35.0	35.1	35.2	35.3	35.4	35.5	35.6	35.7	35.8	35.9	26
27	36.0	36.1	36.2	36.3	36.4	36.5	36.6	36.7	36.8	36.9	27
28	37.0	37.1	37.2	37.3	37.4	37.5	37.6	37.7	37.8	37.9	28
29	38.0	38.1	38.2	38.3	38.4	38.5	38.6	38.7	38.8	38.9	29
30	39.0	39.1	39.2	39.3	39.4	39.5	39.6	39.7	39.8	39.9	30
31	40.0	40.1	40.2	40.3	40.4	40.5	40.6	40.7	40.8	40.9	31
32	41.0	41.1	41.2	41.3	41.4	41.5	41.6	41.7	41.8	41.9	32
33	42.0	42.1	42.2	42.3	42.4	42.5	42.6	42.7	42.8	42.9	33
34	43.0	43.1	43.2	43.3	43.4	43.5	43.6	43.7	43.8	43.9	34
35	44.0	44.1	44.2	44.3	44.4	44.5	44.6	44.7	44.8	44.9	35
36	45.0	45.1	45.2	45.3	45.4	45.5	45.6	45.7	45.8	45.9	36

Calculated by Julien A. Hall, M. Am. Soc. C. E.

FOR KEITH'S RAILROAD CURVE TABLES SEE END OF BOOK.

	E16	Coord	Intersections		
I 10	7143	G 10	6735	E15	6676
I 11	66.34	G 11	66.15	E16	65.33
I 12	65.33	G 12	65.20	E17	8527
I 13	65.40	G 13	6552	E18	92 20
I 14	67.21	G 15	66.80		
I 15	66.98	G 16	6699		
I 16	67.12	G 17	71.13	D 10	8639
I 17	68.96	G 18	74.60	D 11	78.00
I 18	76.88			D 12	65.09
I 19	81.84			D 15	6666
I 20	84.65	F 10	73.30	D 16	6598
I 21	88.00	F 11	6585	D 17	79.13
I 22	95.17	F 12	65.36	D 18	01.93
I 23	402.14	F 15	66.92	D 15-15N	6923
H 10	67.94	F 16	65.38		
H 11	66.14	F 17	78.58		
H 12	65.72	F 18	88.18	Level Prospect Hole	
H 15	66.83			C 10	81.18
H 16	67.54			C 11	70.71
H 17	69.15			C 12	64.92
H 18	74.26	E 10	90.07	C 13	65.10
H		E 11	74.46	C 15	66.62 =
		E 12	65.09	C 16	66.68
		E 13	6507	C 17	75.61
				C 15-18N	68.72

P10 4.95 S 95.53
P10 2'N 84.47

C 18-412.11		N 10	79.29	P10	87.03
		N 11	66.24	P11	69.55
		N 15	65.70	P12	65.18
B 10	74.54	N 16	71.16	P13	64.72
B 11	66.69	N 17	88.92	P15	65.67
B 12	65.05	14.98 dist N17 114°24	99.2	ON Diagonal 173 P17 C18-	81.62
B 15	66.36			P17	76.29
B 16	66.41			P18-388S =	81.29
B 17	92.08	N 10	84.47	P18 =	86.62
		N 11	66.54	Q9-4'W	93.43
		N 12	64.82	Q10 -	69.11
		N 13	64.89	Q11 -	66.06
A 10	69.87	N 15	66.00	Q12 -	65.52
A 11	66.55	N 16	74.99	Q15	65.56
A 12	65.08	N 17	90.39	ON Diagonal 18.95 Q18-R11	80.64
A 13	64.96			Q17	73.27
A 14	65.99			Q18	84.64
A 15	65.95	O 10	89.59		
A 15-8'N	70.57			R5-	99.85
A 16 9.34 N 5'W	92.63			R6-	78.39
A 19 =	46.44	O 11	76.63	R7-	91.76
A 20 =	56.02	O 12	64.75	R8-	82.57
A 21 =	63.41	O 15	65.79	R9-	71.73
		O 16		R10-	66.13
		O 17	77.64	R11	65.98

O17-17.84N 402.39

	E10 Coord		Intersections		
I 10	7143	G 10	6735	E15	6676
I 11	66.34	G 11	66.15	E16	65.33
I 12	65.33	G 12	65.20	E17	85.27
I 13	65.40	G 13	65.52	E18	92.20
I 14	67.21	G 15	66.80		
I 15	66.98	G 16	6699		
I 16	67.12	G 17	71.13	D 10	8639
I 17	68.96	G 18	74.60	D 11	78.00
I 18	76.88			D 12	65.09
I 19	81.84			D 15	6666
I 20	84.65	F 10	73.30	D 16	6598
I 21	88.00	F 11	65.85	D 17	79.13
I 22	95.17	F 12	65.36	D 18	01.93
I 23	402.14	F 15	66.92	D 15-15N	6923
H 10	67.94	F 16	65.38		
H 11	66.14	F 17	78.58		
H 12	65.72	F 18	88.18	Level Prospect Hole	
H 15	66.83			C 10	81.18
H 16	67.54			C 11	70.71
H 17	69.15			C 12	64.92
H 18	74.26	E 10	90.07	C 13	65.10
H		E 11	7446	C 15	66.62 =
		E 12	65.09	C 16	66.68
		E 13	6507	C 17	7561
				C 15-18N	68.72

P10 4.95 S 95.53
P10 2'N 84.47

C 18-412.11

		M 10	7929	P10	87.03
		M 11	66.24	P11	69.55
		M 15	65.70	P12	65.18
B 10	74.54	M 16	71.16	P13	64.72
B 11	66.69	M 17	88.92	P15	65.67
B 12	65.05	14.98 dist M17 114°±	99.2	on Diagonal P17 Q18-	81.62
B 15	66.36			P17	76.29
B 16	66.41			P18-3.88 S =	81.29
B 17	92.08	N 10	84.47	P18 =	86.62
		N 11	66.54	Q9-4'W	93.43
		N 12	64.82	Q10-	69.11
		N 13	64.89	Q11-	66.06
A 10	6987	N 15	66.00	Q12-	65.52
A 11	66.55	N 16	74.99	Q15	65.56
A 12	6508	N 17	90.39	On Diagonal 10.95 S Q18-R11	80.64
A 13	64.96			Q17	73.27
A 14	65.99			Q18	84.64
A 15	65.95	O 10	89.59		
A 15-8'N	70.57			R5-	9985
A 16 9.39 N 5' W	92.63			R6-	98.39
A 19 =	4644	O 11	76.63	R7-	91.76
A 20 =	56.02	O 12	64.75	R8-	82.57
A 21 =	63.41	O 15	65.79	R9-	71.73
		O 16		R10-	66.13
		O 17	77.64	R11	65.98

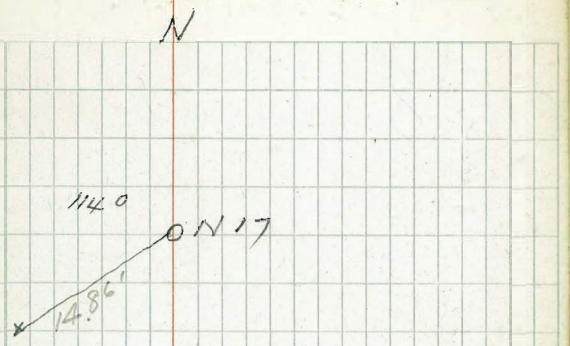
O17-17.84N 402.39

Elevations Coord Intersections

R 12	64.67
R 13	64.70
R 14	65.51
R 15	65.60
R 16-12'N	68.98
R 17-3'N	87.97
R 17-15'N	96.86
R 18	97.13
R 19	425.46
R 20	441.39
R 21	464.64

5+43.79 P.I. Curve	471.42
5+50	7554
6+00	73.90
6+25	8031
6+50	84.70
6+75	89.01
7+00	90.75
7+25	92.94
7+35.79	93.40

Copied



8/7/17

	+	H.I.	—	Elev	
	11.07	382.37		371.30	BM
T.P.	2.04	383.98	0.43	381.94	T.B.M.
N16			9.0	374.98	✓
O17			6.34	377.64	✓
P17			7.69	376.29	✓
P18-38'S			2.69	381.29	✓
Q17			10.71	373.27	✓
T.P.	12.24	395.09	1.13	382.85	✓
Q18			10.45	384.64	✓
P18			8.47	386.62	✓
N17			4.69	390.40	✓
M17			6.17	388.92	✓
T.P.	10.12	407.96	2.25	397.84	
5'W.A Line			10.33	397.63	✓
R17-3'N			14.99	392.97	✓
R17-15'N			6.1	396.86	✓
R18			5.83	397.13	✓
T.P.	12.75	421.60	0.11	409.85	✓
T.P.	11.82	426.53	0.89	414.71	✓
R19			1.07	425.46	✓
T.P.	11.90	437.99	0.44	426.09	✓
T.P.	12.76	449.26	1.49	436.50	✓
R20			7.87	441.39	✓
T.P.	12.47	460.92	0.81	448.45	✓

Bolt in Rock on N Line

Point on Concrete
A16 934 North 5' West

8/7/17

	+	H.I.	−	Elev
		460.72		
T.P.	12.83	472.59	1.16	459.76
R-21			7.95	464.64
T.P.	8.29	480.03	.85	471.74
T.P.			12.32	467.71
5+43.79			8.61	471.42
5+50			4.49	475.54
6+00			6.13	473.90
T.P.	12.74	492.04	0.73	479.30
6+25			11.73	480.31
6+50			7.34	484.70
6+75			3.03	489.01
7+00			1.29	490.75
			5.43	486.61
T.P.	5.67	496.42	1.29	490.75
7+25			3.48	492.94
7+35.79			3.02	493.40
	9.54	476.25		467.71
A-21-TP	11.45	486	12.84	463.41
A-20			8.84	456.02
T.P.	4.48	456.73	12.61	452.25
A.19			10.29	446.44

✓

on Point below P.T.
P.T. of Curve
on Tangent
" "
" "
" "
" "

✓ Check U.S.G.S.-B.M. 486.569 ~ Correct Ele

TP on Point below P.T.

Hi-

A036	At M17	114° Lt 1498'	99%
96	330-30	16.4	
96	338-30	24.9	
96	348	26.9	
96	35/	31.8	
02	337	29.5	
98	349-30	33.8	
98	349-30	31.9	
98	337-30	29.4	
98	330	26	
98	336	23%	
98	328	14.3	
98	355	4.4	
98	~~B~~ 30	2.1	
98	65-30	26	
98	169	3.2	
98	158	7.6	
98	159-30	15.3	
98	165	23.8	
98	164-30	41.5	
00	165	41.6	
02	166	41.3	
02	167	39.9	
02	165-30	387	
—	165	28.1	

8/9/17

1

A036	At M17	114° Lt	99%
00			
02	164-30	22.2	
00	167	18	
02	171-30	19.3	
02	176-0	20	
02	185	6.8	
00	179-30	11.2	
00	167-30	8.2	
02	207-30	5.9	
00	202	4.0	

Hi-3.8

80.09	At P17		76.9
	68		
	68	-314-30	28.4
	68	-314-30	34.5
	68	-316	22.6
	68	-308	18.4
	68	-314°	15.6
	68	-314-30	12.2
	68	343-	16.3
	68	356	14.9
Ring Cont.	68	36°	15.1
" "	68	64°	19.1
" "	68	65-30	22.4
	68	50-	28.7

H.1.3.8 80.09	Ht P.1			76.29
68	62-30	37	✓	
70	65	36.8	✓	
70	57-30	32.4-	✓	
70	54°	29.3	✓	
70	72-30	24.3	✓	
70	71-30	20.6	✓	
70	63-30	18.8	✓	
70	50°30′	15	✓	
70	35°	15.3 ′45	✓	
70	12°	13.3	✓	
70	332-30	12.2	✓	
70	313	10.2	✓	
70	307	16.4	✓	
70	307-30	22	✓	
70	307	24.8	✓	
70	309.30	26.9	✓	
70	309	29.5	✓	
72	296.30	24.4	✓	
72	303	25.8	✓	
72	307	23.3	✓	
72	308	15.4	✓	
72	310	11.3	✓	
72	311-30	7.0	✓	
72	332-	9.5	✓	

8/9/17

80.09	AP 17		76.29
✓	72	346.30	9.7-
✓	72	29-	4.8
✓	72	80	18.9
✓	72	81-30	26.0
✓	72	58.30	28.7
✓	72	57°	31.2
✓	72	60.30	32.7
✓	74	65-30	35.0
✓	74	63	29.6
✓	74	76.30	29.
✓	74	92°	26.3
✓	74	96°	21.9
✓	74	96	6.3
X✓	74	47	3.7
✓	74	347	5.8
✓	74	327-30	7.0
✓	74	281	4.4
✓	74	308	12.8
✓	74	305.30	21.7
✓	74	302	23.1
✓	74	296	22.4
✓	76	294-30	25.8
✓	76-	295-30	22.4
✓	76	294	19.3

80.09	Ft	Pit		76.29
76.	245-30	1.3	✓	
76	211.	3.5	✓	
76	331.30	2.2	✓	
76-	113.30	8.6.	✓	
76	108.30	11.4	✓	
76	115	12.1	✓	
76	119	16.3	✓	
76-	115.30	21.0	✓	
76	99°	29.7	✓	
76.	88°	28.9	✓	+
76	87.30	30.9	✓	
76	76°	31.6	✓	
76	71°	30.3	✓	
76.	67.30	33.9	✓	
76	68.	36.4	✓	
78.	71.30	40.1	✓	
78	72-30	35.	✓	
78	103-30	34.5	✓	
78	123°	23.8	✓	
78	125-30	20.	✓	
78	121-30	18.4	✓	
78	120-	11.1	✓	
78	128°	9.0	✓	
78	114-30	5.8	✓	

8/9/17

6

80.09	Ft	Pit		76.29
✓	78	173°		7.8
✓	78	183-30		14-3
✓	78	195-30		14-9
✓	78	206-30		11.9
✓	78	227°		18.2
✓	78	236-30		20.4
✓	78	253		29.5
✓	78	258°		29.7
✓	78	262.30		23.3
✓	78	266°		24.1
✓	78	264-30		28.5
✓	78	269.		30.5
✓	78	281-30		25.2
✓	78	286-30		25.4
✓	78	293-30		22.
✓	80	277-30		37.
✓	80	277-30		36.
✓	80	274-30		34.7
✓	80	284-30		33.7
✓	80	284-		30.1
✓	80	274-30		33.3
✓	80	270-30		35.2
✓	80	271-30		32.8
✓	80	268		31.2

80.09		46 P17		76.29
80		262	31.9	✓
80		250-30	29.8	✓
80		233	19.7	✓
80		220	18.3	✓
80		203	19.9	✓
80		191-30	18.7	✓
80		185	20.7	✓
80		178	15.6	✓
80		168°	15.3	✓
80		168°	13.3	✓
80		177 30	11.8	✓
80		167 30	9.5	✓
80		124-30	12.8	✓
80		126	18.0	✓
80		129.30	21.5	✓
80		121.30	31.3	✓
80		107.30	37.1	✓
80		96°	34.3	✓
80		83°	35.2	✓
80		73-30	39.8	

H.I = 495
86.57

8/19/17

On Diagonal P17 - Q18 - 173'

81.62

		10.28		86.57			76.29
84	327-30	46.6		84	115°	35.3	
84	318	40.6		84	106-30	35.	
84	311	30.3		84	100	34	
84	311-30	23.8		84	101	32.1	
84	306-30	23.8		84	115	28.5	
84	277	15.9		84	107	26.8	
84	273	13.6		84	142-30	26.5	
84	265-30	10.4		84	149-30	22.2	
84	280	10.3		84	155-30	21.7	
84	281	6.0		84	157-30	20.1	
84	170	10.3		84	168	20.4	
84	153-30	19.2		84	183	13.1	
84	141	23.5		84	263	88	
84	135-30	23.4		84	258-30	12.2	
84	135 30	20.0		84	285	14.1	
84	107	27.5		84	268	16.2	
84	101-30	31.0		84	283	16.6	
84	96	33.0	86 88 90	84	303	24.1	
84	96	34.3	87 88 90	84	312	24.2	
84	101	37.0		84	318	41.6	
84	106	35.7					
84	115	25.3					

H.I.

86.57	ON Diagonal P17-Q18			17.3	87.62
86	331	53	88	152	29.2
88	330	53	88	165	31
86	327-30	48.9	86	147	28.5
86	321-30	49.6	88	150	30.4
88	323-30	52.1	86	121-30	27.7
88	317-30	44.2	88	130-30	28.3
86 90 / 88 92 94 96	312	24.2	88	129	29.8
86 / 88 90	296	20	88	122	30.2
86 90 / 88	285	17.8	88	117-30	31.8
86	259-30	17.6	88	116-30	37.3
86	262	20.3	86	121-30	29.1
88	259-30	20.9	86	107	32.1
86	249-30	17.3	86	114-30	32.0
88	243-30	18			
86	251	15.2			
88	245	16.4			
86	247-30	18.3			
88	240	13.0			
86	210	11.3			
88	213-30	13.3			
86	197.0	15.7			
88	192-30	19.30			
86	177	22.3			
86	157-30	27.1			

017-018-

10.79
1.8
12.59
5.25
17.84

8

H.I. 505 407.44

At 017 - 17.84 North.

9.28 406.41 97.13 (R18)

017
17.84 North

402 402.39

98	61.3	7.4	08	96.0	34
98	75	10.8	02	138-30	6.8
96 98	42	7.0	02	129-30	11.9
98	76	11.4	02	139-30	14.5
98	88	13.5	04	153	12.3
96 98	77	18.5	04	135	9.7
96	75	17.4	04	140	8.0
96	87	13.5	04	147-30	9.1
92	117	25.8	04	194	6.8
94	105	23.0	04	214	3.2
94	114-30	16	04	234-30	3.5
94	115	23.8	04	273	3.8
94	117-30	24	04	293	8.5
94	118-30	24.5	04	290	14.6
00	94	4.8	04	296-30	16.8
00	109	7.2	04	294-30	17.8
00	108	11.2	04	284	16.3
00	118	10.6	08 04 (02-06)	285	23.8
00	115	14.0	06	282	20.3
00	117-30	16.4	06	277	16.4
02	292-30	6.1	06	272	15.6
			06	248-30	19.7

H1						
40744	Aft	017	17.84 North			402.39
06	244	17		90	110	354
06	253-30	14.6		98	115-30	318
06	251	13.6		98	120-30	28
06	241-30	13.9		00	116-30	33.2
06	224	86		06	119-30	30.2
06	200	10.3		06	126-	21
08	284	22.9		04	115	334
08	275	24.8		04	116	304
08	269-30	18.3		06	130°	18.3
08	252	20.5		08	130°	18.8
08	247-30	19.7		04	130°	18.5
08	235	15.5		02	130°	18.3
Back 08	129-30	18.		00	130°	18.3
08 06	115-30	33.5		00	126 30	20.5
02	115	336		02	"	"
02	115	306		04	127	23.3
00	115	306		06	127	23.6
98	113-30	34.		08	127-30	23.3
98	113-30	31.3		00	120.30	25.2
06-08	127-30	2		02	123°	24.7
06-08	119	27		04	123.30	24.3
96	112-30	36		06	127.30	24.0
96	118-30	29		08	120°	26.8
94	109-30	37.7		06	120°	26.4
92	109-30	367				

407.44		017	17.84 N.			402.39
04	130	25.9	04	116-30		29.2
04	129.30	25.4	04	115		30.7
02	121.30	27.2	02	115		30.9
00	121	27.2	02	121°	x	27.
08	117	30.5	02	123 30		23.8
06	117	30.5	02	128		18.4
02	115 30	30.5	90	116-30	x	26.2
04	115 30	30.5	90	109.30		35.3
00	115 30	30.5	90	105		40.3
98	115.30	30.5	92	105		40.3
96	115.30	30.5	92	108-30		36.5
06	129.30	18.4	92	115.30		30.
06	127-30	23.3	94	105-30		405
04	120.0	26.6	94	112-30		354
06	117	30.4	96	110-30		394
08	117	30.4	98	112-30		42
08	130	26.2	00	113		438
04	127-30	23.2	02	113		452
08	129.30	18.5	02	114-30		452
04	127 30	18.2	04	113 30		470
			06	114 30		496
04	127°	23.1	06	113		496
04	123°	24.5	08	114		525
04	123°	25.8	08	117		52
04	119-30	27.3	08	116		475
			08	106-30		51

407.44		At 017	1748 North		402.39
06	106-30	48			
04	106	46.8			
02	106	45.3			
00	106	45			
98	108	47			
(X) 06	107-30	55			
HI = 455 / 401.41		At R17	15 North		96.86
90	234	22.5	92	340	11.0
90	208-30	14	92	324-30	5.2
90	298-30	8.3	92	290	5.6
90	315	9.0	92	303	12
90	334-30	14.3	94	194-30	13.5
90	346	14	94	303	4.0
90	14-30	65	94	73	4.1
90	8°	11.9	94	61	5.9
90	37-30	17.6	94	33-30	11.3
90	50-30	18.8	94	45	14.7
90	73-30	17.7	94	73	16.0
92	74	17.4	96	75-30	15.4
92	51	16.7	96	49°	13.5
92	36	14.8	96	46	10.5
92	21	10	96	69-30	6.7
92	36-30	5.7	96	33-30	4.3
92	3-30	6.1	96	31	2.9

HI

401.41		At R17	15 North		96.86
96	186-30	14.6			
98	179	15.4			
98	171	9.4			
98	181-30	4.7			
98	51	4.3			
95	77	7.8			
98	56-30	12.4			
98	65	13.9			
98	73-30	14.6			
00	73	14.5			
00	90	9.6			
00	76	6.9			
00	147-30	5.0			
00	168	11.4			
00	170-30	12.3			
00	173	16.9			
02	167-30	19.1			
02	159	12.8			
02	148	12.9			
02	153-30	10.4			
02	135	6.7			
02	95	7.8			
02	107	11.7			
02	92-30	12.3			

4.5
H.I. = 97.27

87.97

At R.7 3 N

	763	97.27	8464
88	180	1.0	
88	92	1.3	
88	70	11.0	
88	83 30	15.2	
80	321	18.7	
80	337-30	14.5	

H.I. = 4.5
73.53

At R.16 12' North

68.98

	7.93	H.I. = 73.53	6560
68	179-30	12.5	
℄ Flume	00	10.9	
℄ Flume	78-15	5.45	
68	106	2.	
68	131	13.4	
68	115	23.4	
70	117	23.2	
70	133	13.0	
70	153	5.7	
70	177	4.7	
70	185	2.0	
70	269	7.3	
70	279	17.3	

Q.8

R.15

6/4.98
15.98

	+	HI	-	Elev		
	11.38	382.68		371.30	BM	Bolt in Rock.
T.P.	11.16	393.61	0.23	382.45		
T.P.	11.06	404.35	0.32	393.29	✓	
110-15.98 S.			11.67	392.68		
I 9			7.74	396.61		
I 8			2.55	401.80		
T.P.	12.30	416.38	0.27	404.08	✓	
I 9-14 S.			10.91	405.47		
I 7			6.20	410.18		
T.P.	11.43	427.76	0.05	416.33	✓	
I 6			7.44	420.32		
T.P.	12.05	439.34	0.47	427.29	✓	
I 5			8.99	430.35		
T.P.	12.87	451.80	0.41	438.93	✓	
I 4			11.20	440.60		
I 3			2.39	449.41		
T.P.	12.73	463.83	0.70	451.10	✓	
I 2			7.42	456.41		
T.P.	12.55	475.72	0.66	463.17	✓	
I 1			11.80	463.92	✓	
I 0.0			7.50	468.22		
T.P.	12.58	481.17	0.13	475.59		
T.P.	12.30	497.87	2.60	485.57		
			2.93	494.94	BM	Boulder-Cement Reservoir

Offset

	+	H.I.	−	Elev
	11.36	416.83		405.47
H 9			13.47	403.36
H 8			7.12	409.71
G 8			1.32	415.51
G 9			8.46	408.37
F 9			12.52	404.31
F 8			4.61	412.22
T.P.	5.0	410.08	11.75	405.08
E 9			9.68	400.40
B 9			12.72	397.16
D 9			14.12	395.96
	8.58	428.89		420.31
H 7			9.72	419.17
H 6			3.08	425.81
G 7			5.12	423.77
F 7			2.53	426.36
E 8			9.70	419.19
D 8			11.15	417.74
C 8			7.78	421.11
	2.78	443.37		440.59
G 6			12.24	31.13
F 6			8.39	34.98
E 6			5.37	38.00
E 7			13.95	29.42

I 9 - 14.15 -

Objects

I 6

I 4

	+	H.I.	−	Elev
		44337		
D7			11.97	3140
D6			3.21	4016
C7			6.0	37.37
B7			9.22	3415 ✓
T.P.	10.96	45317	1.19	44218
C.6			5.20	4794
B.6			1.74	5140

Copied

8/14/17.

Check Levels

B.M.	8365	379.665		371.30	B.M.
T.P.	12.748	91.630	0.783	78.882	Rock
T.P.	11653	03.058	0.225	91.405	
I 10-15.98$			10.37	92.69	
I-9			6.45	96.61	
I-8	13148	14941	1.265	01.793	T.P. on Bolt.
I 9-14'S			9.475	05.466	
I 7			4.763	10178	
T.P.	12.492	16.683	0.750	14.191	Rock
I 6			6.370	20.313	
T.P.	11.548	37.481	0.750	25.933	
I 5			7.145	30.336	
D.	12835	50.276	0.090	37.391	Rock
I 4			9.637	40589	
I 3	12.130	61.524	0.832	49394	T.P. on Hub
I 2			5.130	56.394	
T.P.	12.292	72.718	1.098	60426	Rock
I 1			8.825	63893	
I 0			4.525	68193	
D.	12.848	85.483	0.083	72.635	Rock
D.	12.303	96.841	0.945	84538	
B.M.			1.948	94893	Rock Concrete Basin

Note Sight I 23 for Zero Az

H.I. = 4.0

96.69	At I 10	15.98	South	9260	
84	44'	113-30			
84	42.2	111			
84	38.0	110°			
84	32.6	111			
84	32.4	105°			
84	30.	98			
84	31.2	101-30			
84	27.1	98-30			
84	26.7	93			
84	24	93			
84	23	91.30			
84	25.1	88			
84	24.9	82			
84	21.6	66			
74 to 84	19.5	61			
84	19	64			
9. Vert. 84	14.9	53			
84	10.6	46°			
84	8.7	35			
84	5.7	4°			
84	10.1	297-30			
84	11.3	304			
84	15.1	298			
84	18.2	299			

96.69	At I 10	15.98	South	9260	16
84	20.5 - 283°	81	25.3 - 87.30		
86	20.7 - 281°	81	19.4 - 93-30		
86	17.7 - 295-30	86	25 - 94-30		
86	15.5 - 297	86	26.8 - 100-30		
86	12.3 - 287-30	86	30.5 - 99		
86	9.3 - 293-3	86	32.2 - 103		
86	9.3 - 300	86	32.2 - 109-30		
86	5.6 - 344-30	86	32.2 - 116		
86	4.2 - 2° 30	86	34.6 - 118		
86	5.7 - 32°	86	38.5 - 116-30		
86	7.0 - 53°	86	40.1 - 116		
86	9.4 - 94-30	86	41.7 - 117-30		
86	10.6 - 81-30	86	43.0 - 117		
86	8.3 - 56-30	86	45 - 119		
86	10.0 - 48	88	49 - 123		
86	10.9 - 55-30	88	44.5 - 119-30		
86	13.0 - 74-30	88	40 - 117		
86	12.4 - 64-30	88	38.0 - 116-30		
86	13.2 - 56	88	37.1 - 118-30		
86	15.5 - 56	88	35.6 - 127		
86	17.5 - 61	88	33.2 - 126-30		
86	18.7 - 72	88	32.7 - 121		
86	19.6 - 70	88	29.1 - 121		
86	24.3 - 81-30	88	31.6 - 116		

8/14/17

96.69		AH I 10 - 1598 S.			97.69
88	30	105-30	88	6.1	55-30
88	28.5	100	88	5.7	22
88	27	100	88	4.6	33.7
88	24.7	96-30	88	6.0	31.4
88	22.8	98	88	5.1	30.4-30
88	21.1	92.30	88	9.0	296
88	16.9	95	88	11.4	290
88	15.3	89	88	15.7	287-30
88	9.9	91	88	17.7	287-30
88	12.8	112-30	88	17.7	291-30
88	8.8	106	88	20.7	286
88	8.0	90	90	20.7	283-30
Ring 88	13.9	57 ✓	90	16.7	285
" 88	17.1	65 ✓	90	14.0	286
" 88	17.1	75.30 ✓	90	12.3	289
" 88	13.6	73 ✓	90	10.5	285
" 88	17.5	65-30 ✓	90	8.7	295
Ring 88	17.0	88° ✓	90	6.3	300
" 88	21.6	81° ✓	90	5.0	298-30
" 88	24.6	88-30 ✓	90	3.3	315
" 88	21 ✓	91-30 ✓	90	3.5	15
89.2	14.4	67	90	5.5	80
89.6	22.8	89	90	7.7	98
			90	8.3	111

17

96.69		AH I 10 - 1598 S			97.69
90	8.9	123	97	7.6	326
90	14	121	97	9.1	275
90	13.5	112	97	15.0	286
90	18.4	104-30	97	20.4	282
90	22.0	113-30	94	20.3	281
96	23.8	120	94	15.7	280-30
90	28.3	121-30	94	13.4	275
90	28.6	125	94	13.7	262
90	31	127-30	94	10.4	258-30
90	32.6	136	94	10.6	249-30
97	37.3	142-30	94	8.7	146°
97	30	134	94	14.0	132-30
97	28.4	132	94	18.7	138-30
97	29.6	129-30	94	22	133
97	28.9	126-30	94	30	155
97	26.3	125	95	31.5	143
97	27.9	123	96	30.7	145
97	20.9	114	96	29.8	135
97	17.7	107	96	24.8	134
97	15.1	117	96	19	139-30
97	16.7	118-30	96	20.3	144
97	14.0	127-30	96	13.9	139
97	7.9	134	96	7.7	163
97	6.7	170	96	8.9	227
97	5.0	108	96	8.5	237-30

96.69		At I 10	15.98 S		92.69
R. Cont 94	15.0	129			
" " 94	18.3	115-30			
" " 94	23.5	124			
" " 94	22.8	130			
" " 95.5	21.7	128-30			
" " 95.0	18.2	121			
96	15.9	261			
96	14.0	263			
96	13.6	276-30			
96	16.5	280			
96	19.7	278			
96	21.0	275			
TP. for	Ele.	I 10	15.98 S	21' E	
TP.		5.33	93.79	8.23	88.46
		see pg. 20			

H.I. = 3.95 75.38		At I 10			71.43
74	14.2	284	on Cont. Trav. line with	15.7	85
74	8.9	300	76	20.8	280
74	8.0	317-30	76	33.3	283-30
74	4.9	329	76	20	289-30
74	6.2	32	76	8.2	321-30
74	8.7	35	76	5.9	00
76 74	12.4	53	76 V with 74		
74-76	12.8	83			
74	18.8	88			

H.I. = 4.8

8/15/17

10.27	At I 9	14' S			05.47
98	26.7	311	00	29.3	138°
98	20.8	313-30	00	27.4	136
98	17.5	302	00	24.6	139
98	15.1	298-30	00	20.6	147-30
98	14.3	279-30	00	18.8	147-30
98	12.8	282	00	16.5	157-30
98	11.8	269	00	11.4	167
98	10.9	248	00	10.4	192-30
98	13.1	216-30	00	8.9	222
Running Cont. 98	14.8	274	00	10.0	280
	13.4	266-30	00	8.5	297
	11.2	258	00	9.3	334
	18.3	254-30	00	22.6	32.1
Rock	20.6	264	02	27	333-30
	18.5	268	02	13.0	349-30
99.3	17.2		02	11.5	351-30
98	17.4	152	02	8.3	33-30
98	20.3	156	02	6.3	5
98	26.6	139	02	3.6	15
98	28.	142-30	02	6.7	293
98	30.1	141-30	02	5.0	270
98	31.2	138	02	6.5	257
98	31.3	130	02	6.9	226-30
00	31.3	130	02	8.5	175-30

Hi = 4.8

10.27 — At I 9-14-5 — 0547

02	16.1	156	04	3.4	202-30
02	18.5	148	04	3.9	281
02	20.2	142-30	04	3.5	300
02	21.3	138	04	7.1	71
02	25.1	137	04	6.7	55
02	27.1	134	04	10.6	64
02	29.3	138	04	13.4	32
02	30.7	133-30	04	12.2	00
02	30.7	128	04	16.6	350
04	27	117-30	04	19.6	348
04	29.6	125	04	26.9	336
04	30.3	132-30	04	30.6	339
04	29.3	138	06	31.7	348
04	27.1	133-30	06	26.4	343-30
04	25.0	134	06	25.3	348
04	24.8	131	06	27.6	351
04	20.4	142	06	24.5	356-30
04	18.8	148	06	18.5	8
04	13.5	154	06	17.7	5
04	8.0	164	06	16.1	8
04	7.3	155	06	17.8	30-30
04	6.3	165-30	06	15.9	42
Rng 04	7.3	166	06	14.0	44
" 04	6.1	184	06	13.2	55

8/15/17

19.

10.27 — 0547

06	17.4	65°	08	18.8	95 Rng C.
06	17.6	78	08	17.4	94-30 " "
06	7.1	81	08	17.5	90 " "
06	5.2	101	09.4	23.1	110-30 " "
06	4.5	79	07.7	14.	141 " "
06	1.5	39	08.3	5.4	143-30 " "
06	2	137			
06	3	175	08	34.2	111-30
06	6	160	08	33.1	108-30
06	7	132	08	30.6	108-30
06	11	140	08	29.8	104
06	10.4	153	08	28.6	104
06	18.5	146	08	27	97
06	23.4	134	08	27.1	91
06	25.6	129	08	28.3	85°
06	25.5	123	08	25.7	83°
06	26.0	117	08	24.8	77
06	26.6	112	08	23.6	84-30
08	26.8	92 R. Cont.	08	22.3	85
08	25.4	113 " "	08	19.8	68-30
08	23.3	117 " "	08	17.6	62-30
08	21.2	111-30 " "	08	19.5	44
08	21.4	106 30 " "	08	19.3	41
08	21.5	100 " "	08	21.9	27
08	19.3	102 " "	08	21.2	24

A10:7		At I 9-14-5			0547
08	23.1	15°	10	21.9	69 RC.
08	25.4	00	"	20.8	72 "
08	27.6	3-30	10	21.7	78-30 "
08	29.8	356	10	24.2	79 "
08	33	347-30	10.7	23.1	75 "
08	37.6	345	10	25.2	70
10	37.7	351	10	26.7	73-30
10	32.8	356-30	10	31.2	77
10	34.5	357-30	10	31	78
10	32.5	R	10	30.2	85-30
10	31.0	10	10	36	91-28
10	28.7	14			
10	24.6	23			
10	20.8	33-30			
10	21.9	35			
10	18.7	55			
10	21.8	56-30			
10	18.8	67			
10	21.2	68			
10	23.5	66			
10	23.7	62			
10	29.2	69			
11.7	22	58			

H.I. 48.5

93.79	At H10			15.98	South		88.94	
84	66	221	✓	86	20.4	103	✓	
82	76	217	✓	86	19	97-30	✓	
80 82	147	215	✓	82	12.5	115	✓	
80	79	215	✓	86	61	155	✓	
80	157	225	✓	86	60	225	✓	
78	15	214	✓	88	46	234	✓	
76	113	205	✓	88	61	128	✓	
82-80 84	68	151	✓	88	13.0	106-30	✓	
78	88	151	✓	88	20	97	✓	
76-78 72-74	98	151	✓	88	22	103	✓	
84	123	115	✓	88	25.4	100	✓	
84	186	99	✓	88	27.7	98	✓	
82	248	115	✓	88	31.6	93-30	✓	88-90-92 94-96-98
84	250	113	✓	88	36.8	93	✓	88-90-92-94
82	35.5	108	✓	86-88	43.2	98	✓	-90-92
84	33.6	108	✓	90	32.9	99-30	✓	
84	36.9	105	✓	90	20.2	97	✓	
84	37	98	✓	90	9.6	106	✓	
82	29.5	104-30	✓	90	5.8	86-30	✓	
82	39.8	102-30		90	2.9	68	✓	
86	36.8	95-30	✓	90	2.8	326	✓	
82	33.9	99	✓	92	2.8	89	✓	
80	30.5	99-30	✓	92	13.4	98		
82	24.9	111-30	✓	92	16.7	91		
				92	18.7	96	23.2	95

4.85

7230 Aft G 10 67.35

72	14°	311	74	14.0	315-30
72	12.5	309	74	12.5	312
72	10	315	74	10.6	323
72	6.6	304	74	8	316
72	3.4	303	74	5.3	321
72	6.0	69	74	4.4	19
72	12.5	75	74	13.0	72
72	13.9	82	76	5.3	21.30
72	20	91	76	6	344
70	13.2	112			
70	9.2	94			
70	11.8	79			
70	6.0	75			
70	4.7	295			
70	6.9	300			
70	9.3	315			
70	9.7	301			
70	13.7	289			
70	16.7	282			
70	17.7	281-30			
70	18.5	285			
72	25.8	274			
72	20.5	288			
72	18.8	288			
72	15.9	288			

#1
4.3

776 Aft F 10. 733

74	13.5	287	
74	12.4	293	
74	11.4	286	
74	8.	295	
74	10.1	314	
74	4.3	334	
78 76	13	303	
76	3.8	342	
76	10.8	315	
76	4.3	342	
76	7.6	133	
78	8.3	127	
80	8.3	120	

H.I – 3.5

9357		At E.10			9007
80	28.0	279	8x	35.6	113
80	25	280	8x	29.6	117-30
80	25?	277	8x	27.5	117
80	22.x	270	8x	25.3	119-30
80	17.8	254	8x	23.5	115
80	18.1	242	8x	27.7	110-30
80	17.6	235	8x	21	111
80	18.8	227	8x	15.0	119-30
80	15.x	207	8x	12.5	134
80	17.8	199	8x	10.3	146-30
80	16.3	194	8x	10.4	165
80	13.4	19x	8x	12.5	187
80	11.4	156	8x	14.0	20.5
80	14.x	127-30	8x	17.1	223
80	20.8	119	8x	13.x	234-30
80	20.8	225	8x	15.8	236
80	22.9	124	8x	15.5	247
80	25.1	127	8x	15.x	254-30
80	28.x	121	8x	18.8	259-30
80	33	126	8x	24.8	276
RC 80	29.x	137	8x	22.x	280
" " 80	29.0	143	84	27.4	280
" " 80	26.5	141	84	32.6	285
" " 80	25.6	137	84	27.9	285
" "80.8 80	27.8 26.4	134 137	84	21.5	282-30

9357		At E.10			9007
84	21.5	276	RC	27.8	111-30
84	18.2	262	Top "	28.x	111-30 -85.2
84	13.x	254	86	27.6	93-30
84	11.5	258	86	23.1	105-30
84	11.8	245	86	12.3	103-30
84	12.8	231	86	11.8	95°
84	11.0	220	86	8.x	118-30
84	7.3	204	86	7.7	114
84	8.x	193	86	6.9	145
84	9.x	168-30	86	6.5	149
84	6.86	183	86	7.3	237
84	8.4	150	86	5.8	278
84	10.9	134	86	7.7	271-30
84	11.7	113	86	7.7	255-30
84	13.7	110	86	13.7	264
84	15.7	115	86	14.0	277
84	20.3	107-30	86	17.0	274
84	22.8	110	86	18.x	289-30
84	29.0	106-30	86	20	280-30
84	28.7	102-30	86	29.5	289
84	32.1	102	86	33.3	287
RC 84	31.0	109-30	88	33.9	287
" 84	30.7	112-30	88	30.7	291
" 84	29.4	116-30	88	23	287
" 84	28.5	116	88	18.2	290

9357		E10			9007
88	17.5	280	90	2.2	226-30
88	13.0	278-30	90	2.3	333-30
88	12.7	267-30	90	11.5	278-30
88	10.0	262	90	13.5	294
88	9.5	273	90	16.1	294
88	8.1	276	90	22.8	288
88	8.2	282	92 90	25.7	288-30
88	4	297	92 90	30.7	291
88	5.5	227-30	92 90	33.7	287
88	5.3	207	92	22.6	294
88	2.7	179	92	19.4	290
88	5.6	118	92	13.5	296-30
88	8.7	72	92	11.4	294-30
88	12.9	81	92	10.9	290-30
88	14.9	93	92	7.2	290-30
88	18.7	88	92	3.8	39
88	21.2	78-30	92	7.5	42
88	23.8	81-30			
90	26.5	59			
90	8.8	60			
90	3.8	50			
90	4	71.30			
90	1.6	71-30			
90	2.0	133			

R.

8/16/17

H.I = 35
8356

At E11 12.5 South 80.06

	9.10	8356			E11 7446
78	19.2	288-30	76	33.4	112-30
78	15.2	274	80	30.9	105
78	14.7	261-30	80	31.7	108
78	18.0	243	80	34.9	101
78	18.2	251-30	80	38.1	97-30
78	11.3	221-30	80	41.1	92-30
78	8	209			
78	4.3	146			
78	7.0	119			
78	16.5	95			
78	18.4	98			
78	16.7	107			
78	15.3	111			
78	16.1	118-30			
78	19.6	126			
78	26	119			
78	32.1	111-30			
78	35.1	105			
78	40.2	97-30			
78	45.6	92			
76	48.9	93			
76	42.7	97-30			
76	39.2	105-30			
76	35.7	108-30			

At D10

H.I = 49.5

91.34	IH D10				86.39
90	17.9	284-30	88	23.0	42
90	17.7	295	88.0	21.0	45
90	12.2	299	88	15.7	47-30
90	10.8	330	88	10.3	35
90	13.8	351	88	8.1	1°
90	11.3	00	88	4.0	340
90	12.1	13-30	86	26	125
90	16.0	23-30	86	6.4	36
90	17.8	20-30	91	68-30	
90	20.7	28	86	13.2	78-30
90	23.1	26-30	86	15.2	72
90	25.7	27	86	17.8	76
90	29.8	37	86	20.7	71-30
90	32.1	46-30	86	21.7	73
90	33.9	48	86	21.9	69
90	37.7	53	86	22.8	64
90	40	60-30	86	26.3	58.30
90	45.2	64-30	84 86	20.8	47-30
90	49.5	68-	88 84 86	18.8	42
88	47.3	69	88 84 86	16.9	49
88	40.6	63	" "	18.4	52
88	37.5	53	86	34.6	47.30
88	34.0	48-30	86	38	53-30
88	31.3	43	86	40.8	64-30

8/16/17

91.34	IH D10				86.39
84	47.3	70-30	82	14	109
84	46.9	71	82	15.5	101
84	44.8	70	82	19.8	99
84	40.5	77	82	23.2	84-30
84	36.4	79	82	24.5	80
84	32	75	82	36.1	50
84	30.1	68	82	31.5	60-30
84	32.7	67-30	82	27.8	73
84	34.4	63	82	30	87
84	33.8	58-30	82	40	81-30
84	37.6	53	82	44.0	78
84	29.4	54	82	46.7	72
84	23.9	74	82	50.5	73-30 - (80)
84	21.0	79-30	80	46.4	79
84	17.2	88	80	42.2	85
84	14.8	89	80	36.4	91
84	12.8	96	80	33.1	104
84	8.8	83	80	23.8	113
84	7.3	103	80	18.0	110°
84	9.6	108	80	16.9	122-30
82	11.0	120-30	80	15.8	123-30
82	9.3	134-30			
82	13.0	124			
82	4.5	107			

H.I. 5.0

8.18. At C10. 8118

					Dist	
78	200°	15.3 ✓	76		19.0	131° ✓
78	200°	12.2 ✓	76		18.9	151° ✓
78	172°	13.2 ✓	80		31.7	67° ✓
78	168-30	14.9 ✓	80		34.8	69° ✓
78	147	16.7 ✓	80		37.9	67° ✓
78	123-30	15.2 ✓	80		41.5	65° ✓
78	98-30	14.0 ✓	80		45.1	66° ✓
78	80	20.4 ✓	Cove Wall	80	48.7	69° ✓
Vert - 78	63-30	28.6 ✓	"	80	49.0	70° ✓
78	71-30	35.1 ✓	"	80	50.2	70° ✓
78	70-30	38.9 ✓	"	82	49.3	67-30 ✓
78	67-0	40.4 ✓	✓	82	47.0	62 ✓
78	72°	42.2 ✓	Vert	82	43.6	60° ✓
78	74°	44.5 ✓		82	39.7	66° ✓
78	95°	48.8 ✓		82	33.1	67° ✓
76	77-30	48 ✓		82	29.7	65° ✓
76	77	46.2 ✓		84	26.3	56° ✓
76	80	45.5 ✓		84	29.3	56° ✓
76	78	43.3 ✓		84	30.7	62° ✓
76	76	42.8 ✓		84	34.3	63-30 ✓
76	77°	36.9 ✓		84	39.6	63 ✓
76	78	36.3 ✓	Grell	84	42.3	58 ✓
76	73	31.3 ✓	"	84	45.0	59
76	84-30	23.8	Cove Wall	84	51.5	62-30
76	108-30	17.6 ✓				

2.5

8.18 At C10 8118

84	50.8	65° ✓		
" 84	51.5	64-6 ✓		
" 86	51.8	62-30 ✓		
" 86	42.7	57-30 ✓		
86	39.3	62-30 ✓		
86	33.7	62° ✓		
86	31.2	59-30 ✓		
86	29.3	55-30 ✓		

H.I. 5.2

403.66 At H9 403.36

96	6.7	177	96	24.7	111-30	
94	7.7	177	94	25.0	115	
96	9.0	170	94 96	28.4	111	
94	9.0	170	88-96	32.2	109-30	
96	10.1	148-30	96	37.8	106-30	
94	10.1	148-30	96	40.8	107	
96	10.7	140	98	40.7	107	
96	10.6	129	98	37.7	106	
94	12.5	132	98	31.9	110	
96	13.8	120	98	27.2	112	
94	15.8	125-30	98	21.0	110	
96	17.7	109-30	98	16.8	109	
94	18.9	118	98	12.9	115	
94	21.5	117	98	8.7	135	
			98	9.2	148	

A08.66		17 H9			03.36
00	6.1	189-30	04	11.6	111
00	7.8	159	04	16.6	97
00	7.0	148	04	17.3	102
00	9.8	133	04	21.4	98
00	9.2	121	04	21.6	99
00	11.3	115	04	24.6	97-30
00	14.8	110-30	04	27.0	105-30
00	18.8	108-30	04	30.0	106-30
00	23.5	109-30	04	33.3	104
00	25.4	110-30	04	37.8	103
00	30.4	109	04	41.9	104
00	33.3	104	06	37.8	93-30
00	41.7	105	06	37.7	97
02	41.8	104-30	06	35.2	99-30
02	36.9	103	06	32.5	100
02	28.5	108	06	30.8	98
02	23.6	109-30	06	26.1	98-30
02	21.3	108	06	26	97
02	18.6	102	06	21.6	97 30
02	13.5	105	06	21.7	97
02	9	123	06	17.4	100
04	2.2	117	06	17.0	93-30
04	4.8	102	06	13.8	93
04	6.5	118-	06	10.4	97-30
			06	9.8	106

A08.66		17 H9			03.36
06	7.0	105-30			
06	5.7	39			
06	2.9	71			
06	5.3	39			
06	~~13.0~~				
08	17.5	98-30			
08	30	89-30			
08	39	89			

H1=41.5 08.46		17 F9			04.31
96	17.0	214	94	33.5	130-30
96	14.2	211-30	96	32.6	131-30
96	14.5	202	96	32	122
96	13.3	185-30	98	29.0	122
94	14.3	185 30	98	30.4	134-30
96	16.7	178-30	98	28.2	137-30
94	16.7	178-30	98	26.4	139
96	17.5	152	98	16.2	139-
96	18	162	98	13.8	139
96	17.1	160	98	11.2	152
96	21.5	143	98	13.2	157
96	23.1	145-30	98	14.5	183
96	25.7	138-30	98	11.7	183
96	28.8	138	98	13.8	208-30
94	28.8	141			

8/16/17

H.I = 0846		At F9			0431
00	17.9	210-30	0r	9.9	173-30
00	17.1	199-30	0r	12.0	199
00	10.6	194	0r	12.9	205
00	10.5	168	0r	14.3	222-30
00	9.4	133	04	13r	224
00	14.7	139	04	86	225
00	16.r	139 30	04	80	207-30
00	20r	127	04	41	238-30
00	24.3	135-30	04	9.0	100
00	26.8	135-30	04	10.8	105-30
00	25.4	119	04	16.1	105
01.7 68 0r	21.8	126	04	17.6	70
0r	21.7	123-30	04	22.3	55
0r	20.8	121	04	24	60-30
0r	19.5	125	04	31.7	68
0r	19.7	128	04	31.r	71-30
0r	16.0	138-30	04	38r	79
0r	11.9	138	04	44.3	81
0r	10.0	133	04	51.3	86
0r	8.3	105-30	06	49.3	82
0r	6.7	116-30	06	44.8	78-30
0r	7.8	139	06	39.8	73
0r	7.3	165	06	34.4	70
0r	6.9	180-30	06	34.0	67

0846			At F9			0431
06	25.8	58		08	29.6	58
06	21.9	47		08	26.1	57
06	20.7	31		08	34.4	64-30
06	15.3	30		08	41	71-30
06	15.2	37		08	43.8	74-30
06	8.5	39-30		08	48.8	78
06	13.7	67	RC.	08	51.4	79-30
06	11.6	100	RC.	04	9.6	124
06	12.1	75	RC.	04	16.7	111.30
06	7.	65		04	18.1	125.30
06	2.9	382-30		06	11.3	137 Rc.
06	6.0	271				
06	12.3	262				
08	75	271-30				
08	48	326				
08	24	329				
08	7.7	357				
08	11.1	20				
08	17.7	18-30				
08	19	19				
08	25r	21-30				
08	25r	34.30				
08	24r	46-30				
08	25.9	57				

H.1-515

A05.55 AtE9 400.40

0r	13.9	209-30	00	15.8	67
0r	12.6	207	00	10.7	59-30
0r	96	215-30	00	82	80
0r	8.7	225	00	5.4	39-30
0r	13.7	250-30	00	4.5	78
0r	12.7	252-30	00	3.7	115-30
0r	65	227	00	2.2	194
0r	31	360	00	4.4	190
0r	8.1	347	00	5.7	211
02	7.7	29	00	6.5	205
2.7	8.6	23	00	7.2	193.30
0r	10	40	00	10.5	192
02	14.4	63	00	11.9	202
0r	20.4	72	00	13.3	202
0r	26.2	82-30			
02	28.2	85			
0r	29.6	87			
0r	36.3	87			
0r	40.9	87			
0r	47.3	86			
00	47.5	88			
00	28.4	89			
00	27.3	87			
00	24.7	81			
00	19.1	70			

8/16/17

28

U55 00.51 At D9 95.96

9r	27.6	237	94	46.2	92.30
9r	21.5	233-30	94	44.7	93
9r	19.9	225	94	38.7	92.30
9r	11.0	217-30	94	32.8	92.30
9r	8.6	200.	94	10.5	94
9r	6.9	197-30	94	7.5	105
9r	7.4	165	94	5.4	167-30
9r	7.7	139-30	94	6.7	186
9r	6.4	129	94	5.8	132-30
9r	9.0	129	94	6.4	144
10.9	10.9	124-30	94	6.5	166
9r	10.7	123	94	5.0	176
9r	9.7	117	94	5.5	190
9r	7.8	117	94	4.7	230
9r	8.6	101	94	6.5	225
9r	13.2	94	94	7.1	208
9r	18.0	90	94	7.7	223
9r	21.6	93	94	10.5	228
9r	25.3	95	94	13.2	240
9r	31.4	94	94	15.7	233-30
9r	32.9	92-30	94	22.4	241
9r	36.0	95-30			
9r	49.6	95			
94	48.7	95			

H1

A00.51		A+D9			95.96
96	28.3	233	98	47.4	89-30
96	26.6	236-30	98	45.2	88-30
96	26.4	242	98	41.2	90-30
96	25.2	249-30	98	37.3	87.0
96	24.1	249	98	33.2	89
96	23.2	253-	98	6.6	93
96	19.5	243	98	1.0	72-
96	15.1	251	98	3.9	354
96	11.8	243-30	98	9.7	369
96	6.6	261	98	12.3	291
96	3.6	333	98	10.8	284
96	2.3	180.	98	11.2	275
96	2.7	113	98	8.0	267
96	7.3	103	98	8.1	262
96	14.8	90.	98	15.9	259-
98	15.0	89	98	18.2	265
98	23.8	90	98	17.8	255
96	28.4	92-30.	98	24.9	259-30.
98	29	88-30	98	25.3	253
96	34.8	91	98	26.0	249
96	39.3	90	98	29.7	249
96	41.9	91-30	98	28.6	245
96	44	90	98	27.6	241-30
96	47.4	92			
96	51	92-30			

H! = 5.15   8/17/17   29

90.19   A1 A9   85.04 / M 10 / 79.29

	10.90		90.19			
90	15.2	116-30	86	10.8	107	
90	12.7	102	86	9.0	108	
90	8.9	91	86	7.2	99	
90	6.9	72	86	5.6	111	
90	6.5	44	86	3.7	98	
90	5.6	12-30	86	1.5	31	Con About
90	3.8	6°	86	3.0	244	Steel
Concrete 90	4.3	330	84	5.1	211-30	"
Steel 90	4.0	308	84	3.3	238	"
Steel 88	3.7	299	84	2.8	136	
88	3.6	328	84	5.6	114	
88	2.6	348	84	7.5	122	
88	3.3	4-30	84	7.8	110	
88	3.5	30	84	10.6	111	
88	5.1	51	82	5.6	206	Steel
88	5.5	66	82	7.5	135	
~~88~~	~~6.1~~	~~101~~	82	7.9	121	
88	8.0	96	82	9.9	117	
88	10.0	105	82	19.4	143-30	
88	13.0	107	82	25.1	144-30	
88	16.7	126	80	27.8	145	
86	20.3	134	80	22.5	148-30	
84	22.2	142	80	20.9	147	
84	18.8	138-30				

90.19		At A 9			85.04
80	16.6	143			
80	9.8	129-30			
80	8.9	148			
80	7.1	151-30			
80	7.0	157-30			
80	6.4	170			
80	8.1	178			
80	8.0	200			
78	10.8	179			
78	12.6	137			
78	15.9	145-30			
78	16.5	144			
78	22.8	149-30			
Hi = 5.0					
79.54	At	B 10			74.54
72	10.1	116-30	74	38.4	96
72	13.7	70-30	74	35.0	77
P.C. 72	18	86	74	34.4	73
P.C. 72	16.6	81-30	74	31.8	75 30
72	22.2	77	74	29.8	75
72	27.1	68	74	27.3	66
72	30.5	76-30	76 p Steel 74	23.9	79
72	35.2	78	76	24.5	71-30
72	38	97	76	28.2	62
			76	29.7	74
			76	30.0	69
			76	35.2	75

Hi = 4.6					
401.76	At	B 9	—		97.16
88	9.6	155			
88	11.2	117-30			
88	11.6	81			
88	14.1	90-30			
88	20.6	82 Con.			
90	21.2	72	90 70 95		
90	12.3	65-30			
90	10.8	115			
90	8.2	153			
90	7.8	213			
92	6.8	188-30			
92	9.7	106			
92	10.2	82-30			
92	15.8	49 Con.			
92	20.3	79.30			
94	15.2	45			
94	10.3	70			
94	8.2	86			
94	7.0	86-30			
94	6.5	115			
96	39	131			
96	33	107			
96	59	102			
96	86	61			
96	11.0	58			

98	10.8	56
98	6.3	66-30
98	5.7	55
98	3.2	68
00	99	280
00	51	317-30
00	7.7	59-30
00	20.4	68-30
00 Steel	23.5	68-30

	+	HI − At B8		
	3,40	424.51		421.11
B B			4.60	419.91
T P	1.43	414.25	11.69	412.82
B-8-12'N			4.13	410.12

HI 414.25		At B8	12'N			410.12
	0r	23.9	253.30	04	33.1	260
	0r	6.4	188.-	04	35.7	259
	0r	9.1	119.30	04	42.3	261.30
	0z	10.3	97- Com.	04	49.3	259.30
	0z	15.5	84	04	43.3	258
	0z	20 8	95.30	04	42.1	260
	0z	21.3	99	04	39.5	257.30
	0z	22.3	99 steel	04	33.3	258
	04	22.4	94 steel	04	27.0	253.30
	04	21.2	92	04	21.0	253.30
	04	21.2	86.30	04	15 4	247.30
	04	19.4	74 Com.	04	5.9	156-30
	04	16.2	67	04	9.1	108
0-6 0-8 0-10	04	13.0	65	04	10.0	95
	04	9 6	97.30	04 08 010	12.5	65
	04	6.3	143 -	04	20.5	82.3 Com.
	04	16.3	246,30	04	20.4	88-30
	04	21.9	256 -	04	21.1	89.-
	04	26.6	256		21.1	97

414.25 At B8 12'North 410.12

0422.3	97 Steel	08	20.6	261 30	
06 22.1	91 -	08	19 4	265	
06 21.0	91	08	16.1	26 7	
06 21,1	85.30	08	4.5	171 -	
06 19.2	74	08	10.0	78	
06 18.8	66 Com.	08	12.5	65	
06 13.7	55	08	15.4	47 -	
06 12.5	65	08	19.5	50-30 Com.	
06 94	93.30	08	21.1	86-30	
06 5.5	131 -	08	21.2	88-30	
06 4.5	176 -	08	21.9	89 - Steel	
06 16.2	252 -	10	22.2	83 -	
06 20.9	260	10	20.9	89-30	
06 21.6	257	12 14 16 10	20.3	44 -	
06 22.6	260	12 14 16 8 10 20	17.3	43-30	
06 27.6	258	10	12.5	65 -	
06 34.9	262	10	1.0	180 -	
06 36	261	10	11.3	260	
06 41.8	263-30	10	16.4	266	
06 49.8	261.30	10	17.9	270	
08 45.2	265	10	19.6	267	
08 40.8	267 -	10	21.5	270-30	
08 37.9	265-30	10	22 6	268 -	
08 26.5	269.30	10	29.3	266.30	
08 24.6	269	10	40.0	270	

#14 2.5 — At B8 12' North — 410.12

10	44.2	270- ✓
10	45.9	265.30 ✓
10	47.7	266- ✓
10	48.5	268- ✓
10 Ring Cont.		
12	46.9	270-30 ✓
12	46.9	266-30 ✓
12	46.2	269- ✓
12	46.9	270.30 ✓
12	47.7	273- ✓
12	43.4	272-30 ✓
12	30.9	274-30 ✓
12	26.1	270.30 ✓
12	21.7	276- ✓
12	20.0	273.30 ✓
12	15.7	279.30 ✓
12	12.1	266.30 ✓
12	2.0	0 0-0 ✓
12	12.5	65.0 ✓
12	17.3	43-30 ✓
12	20.3	44- ✓
12	20.1	79- steel ✓
~~14~~ 12	22.4	76-30 ✓
14	22.4	76-30 ✓
14	19.7	78- ✓
14	20.3	~~44-30~~
14	17.3	43-30

H.1 = 4.6

424.51 — At B8 — 419.91

14	112	116	~~14~~ 16 18 20 22	20.7	88
14	88	146-30	16	20.7	95
14	76	151	16	21.7	95
14	150	234			
14	193	246			
14	29.9	249			
14	37.7	252			
14	385	259			
14	450	259-30			
14	48.8	262			
14	49.8	256-30			
16	53	257 R.C			
16	48.6	266			
16	42	264			
16	29.6	255-30			
16	21.8	257			
16	130	238-30			
16	7.4	133			
16	65	122-30			
16	105	107-30			
16	145	77-			
16	16.0	82- 16 18			
16	16.4	78 Conc. 16-18 20 22			

H.I. = 5.38   8/18/17 (~~Plot over~~ plotted)

A25.29	A1B 8				A1991
18	21.7	88- ✓	18	34.6	263-30 ✓
18 (16-18, 20-20)	20.7	88- ✓	18	37.0	266- ✓
18 (16-18, 20-22)	~~18.2~~ 16.4	77-30 ✓	18	46.9	268-30 ✓
18	16.2	82-30	20	49.4	274-30 ✓
18	15.3	74-30	20	47-	272- ✓
20	21.8	88-	20	41.1	271 ✓
20	20.7	88	20	33.5	273- ✓
20	18.2	77-30	20	28.0	268-30 ✓
20	16.9	79-30 ✓	20	23.0	267-30 ✓
22	21.8	88- ✓	20	18.5	277- ✓
22	20.7	88	20	12.6	272- ✓
22	18.2	79-30	20	8.0	276- ✓
~~22~~ 22	17.5	67-30	20	6.9	247- ✓
18	12.6	76- ✓✓	20	3.0	217- ✓
~~18~~	11.4	77- ✓	20	0.0	0 0 ✓
18	9.8	96- ✓✓	20	4.9	109- ✓
18	7.5	101- ✓	20	5.7	90-30 ✓
18	4.3	132-30 ✓	20	11.1	86- ✓
18	2.1	148-30 ✓	20	11.6	76-30 ✓
18	3.9	205- ✓	20		77.30
18	7.2	242- ✓	20	20.7	
18	7.8	256 ✓	20	21.7	
18	18.0	266-30 ✓	22	~~8.8~~	88 ✓ out
18	27.3	260- ✓	22	~~8.8~~	8
~~18~~	32.7	265- ✓	22		77-30

out

22	16.4	43- ✓
22	17.4	59.30 ✓
22	13.5	64.30 ✓
22	12.4	61.30 ✓
22	12.1	72- ✓
22	6.6	61- ✓
22	4.6	61- ✓
22	3.0	352.30 ✓
22	6.2	286-30 ✓
22	13.5	286-30 ✓
22	19.0	281.30 ✓
22	~~22.2~~ 19.2	282 30 ✓
22	20.9	279- ✓
22	25.0	273- ✓
22	31.4	279- ✓
22	32.7	277- ✓
22	35.7	277 ✓
22	39.0	278-30 ✓
22	42.1	277- ✓
22	44.2	277-30 ✓
22	49.5	278- ✓
24	51.0	282- ✓
24	41.8	281- ✓
24	39.8	282- ✓
24	36.4	279- ✓

24	31.6	281- ✓
24	29.5	282 ✓
24	27.9	280- ✓
24	22.1	282 ✓
24	22.3	284-30 ✓
24	10.9	291-30 ✓ (2)
24	7.0	328-30
24	5.2	4°- ✓
24	10.3	48.30 ✓
24	14.0	~~48~~ 55-30
24	15.4	55-
24	18.7	62-
con- 24	22.2	57-30
26-28, 30-32, 34 24	~~22~~ 22.8	65-
24	21.4	78 30
24	21.9	78.30

void

4.37

438.52 ATB 7 434.15

26	28.1	130-	28	46.2	256-30
26	27.6	131-	28	41.8	253-
28-30-32 34 26	26.0	127-	28	41.4	249-
26	20.3	124-	28	36.8	248-
26	21.0	127-	28	32.9	247-30
26	15.4	134-30	28	28.6	242-30
26	15 0	154-30	28	24.5	228-
26	18.0	160-	28	22.7	221-
26	16.2	175-30	28	21.1	219-30
26	16.2	195-	28	21.3	216-
26	17.4	195-30	28	15.8	210-
26	18.4	203-30	28	13.4	185-30
26	20.7	209-	28	137	163-30
26	20	211-		13.2	144-
26	22.5	217-	28	12.5	137
26	25.0	215-		14.9	140
26	25,6	222-30		193	128
26	32.4	242-	28	19.7	125
26	37.7	242-	28	26.0	127
26	371	247-		27.8	128 30
26	41 6	249-		27 0	129-30
26	43.0	251-	Steel 30	27.2	127
26	43,7	253-	30	26.0	127
26	47.8	253.80	30	18.9	124-
			30	18.0	129

30	16.3	124		32	9.2	-	146-
30	12.2	137-30		32	7.3	-	117-
30	79	126-30		32	11.5		135
30	72	150-30		32	14.2		128-30
30	10.1	161-30		32	15.5		122-
30	8 5	178-30		32	17 9		127-30
30	10 3	189 -		32	18.6		125 -
30	12,9	202-30		32	17.7		117-30
30	14 8	222 -		32 com-	18 4		115-30
30	17 1	222		32	26.0		127
30	22,5	228-		34	26 0		127-
30	24,0	242-30		34	17.2		112-30
30	32 5	249-30		34	15 8		116
30	37.0	251-		34	14.7		112-
30	40-	249-30			14.2		116
30	40-2	253-30		3	12 8		115-30
30	41 4	258 -		34	13.0		121-
30	42.8	258		34	10 9		126-
30	46 5	260-		34	6 9		105-30
32	46.0	263.30		34	0 0		0 0
32	41 0	259-			9.5		265 30
32	38, 0	256-		34	13.0		250 -
32	25 2	252-30			20.8		252-30
32	16.0	233-			25.7		257-30
32	4.8	206-30			37 7		259-30
					461		267

36	44.2	267	38	24.6 - 272.10
36	35 0	262-30	38	
36	22.1	265-30	38	
36	13.3	267-30	38	
36	10.5	277-		
36	7 7	287-30		
36	4 6.	3 32 30		
36	2.0	351-30		
36	3.6	62.30		
36	13.8	106-		
36	15.0	103-30		
36	26	127-0		
38	24.8	127.0		
38	15.4	105 -		
38	13.1	89-		
38	12.1	88		
38	10.4	81-30		
38	10 2	75-30		
38	5.6	46-		
38	5.4	19-		
38	4.3	00.00		
38	6.6	318-		
38	6.2	305		
38	8 8	311		
38	9.8	297-30		
38	16.0	272-		

2.80 A T B 6

454.20 451.40

42	42.0	264-30	44 (steel)	37.1	143-
42	38.7	256-	44	36.6	145-
42	35.5	261	44	22.9	139.30
42	34.2	255-30	44	22 9	14330
42	29.2	252-	44	18.8	143.30
42	29.2	247-	44	13.8	156-30
42	26.6	248-	44	11.9	153-
42	24.3	240-30	44	11 5	157-30
42	22.7	232-	44	15.9	173-
42	19.2	230-	44	13 2	190-
42	19.4	221-30	44	125	102
42	19.0	215-	44	14.6	204
42	16.3	209.30	44	17.4	224
42	15.9	200-	44	18.2	241-30
42	14.1	190-	44	19 2	234-
42	15.0	179-	44	21.7	239-
42	16.8	169-30	44	21.9	243-
42	21 0	159-	44	23.8	246
42	22.3	150-	44	24 4	254
42	25.3	147-	44	26.7	255
42	24.1 (on steel)	141-30	44	31.4	263-30
42	36.7	145	44	35.9	269-
42	37.6	146-30	44	42.8	272
42	38.1	144-30			

AT B-6-

4					
46	41.0	278-	46	11.1	150-
46	40.2	274	46	13.6	156-
46	38.3	274	46	16.7	149-
46	37.4	271	46	18.7	144-
46	35.6	272-30	46	18.0	139-30
46	34.2	270-	46	19.5	135-30
46	33.5	271-30	46 Corr	23 8	141 —
46	32.5	267-	46	35.3	145- steel
46	31.3	263-	46	35 5	141-30 steel
46	28.1	261.30	48	34.8	140-
46	21.2	260-	48	34.0	141-
46	18.5	260-30	48	31.6	138-
46	19.7	252	48	20.3	125
46	18 2	249,30	48	20.4	133-
46	16.9	233 25	48	17 7	12.5
46	14.0	228-30	48	17.3	129
46	11.9	231-30	48	18.0	138-30
46	11,9	223—	48	17.0	141—
46	8.9	230-	48	16.4	146-30
46	11.2	189-	48	12.7	153-30
46	12.8	189-30	48	9.0	138-
46	14.9	174-30	48	7.0	147
46	13.0	170-	48	4.9	125-30
46	12.3	172	48	3.7	128-30
	9.3	162-30			

ATB-6-

48	5.2	144-	48	34.9	282
48	5.8	227-30	48	37.1	281-30
48	7.1	257 —	48	36.8	289-30
48	9.4	261-30	48	37.3	293—
48	6.9	175-30	48	42.5	294-30
48	9.9	178-	48	43.9	296
48	10.6	190-	48 Ring	51,5	294-30
48	11.2	242-	48	30.9	276
48	15.1	240-30	48	29.1	268
48	17.1	248-	48	31.1	265-30
48	17.1	255—	48	32.8	268
48	16.3	257-30	48	33.1	271
48	16.7	263—	49.2 Top Ring	30.4	271
48	16.3	266—	48 Corr-	24.3	269-30
48	19.5	267-	48	29.7	268(3)
48	21.5	280-	48	26.3	265—
	23.1	278	50	50.0	299
	25.4	278-30	50	40.9	297 30
	26.3	272-30	50	38.7	297-30
	27.6	272	50	37.8	295—
	29.5	274	50	35.1	295
	30.8	277	50	39.4	287-30
	31.8	280-30	50	33.1	285
	34.4	279-	50	28.5	289
			50	29.6	287-30

50	29.0	283-	50	14.3	138°00
50	27.8	288-30	50	15.6	133°
50	24.0	286-30	50	16.0	111°
50	20.9	289-	50	17.9	121-30
50	18.6	285	50 Concrete	18.4	120°
50	18.3	289-30	50 Concrete	31.7	138°
50	15.3	285-	52	26.5	126°
50	14.3	272-	52	18.7	108-30
50	12.0	259-30	52	16.9	103-30
50	11.3	275-	52	14.7	82-30
50	12.2	284-	52	11.0	100-30
50	8.6	297-30	52	12.6	71-30
50	7.4	261-30	52	11.1	79-00
50	9.5	291.30	52	8.8	80-30
50	2.8	245-		7.8	59°
50	2.2	213-		8.9	46-30
50	1.9	170-30		2.0	80-00
50	00	00.00		00	00-00
50	2.5	120-		2.0	180.00
50	5.6	285-30		4.3	318.00
50	6.8	108-00		4.9	290-
50	12.6	108-00		7.4	293-30
50	13.3	124.00		8.2	300-
50	13.2	143-	52	13.5	300.30

52	13.6	295-30	38	34.5	295°00'
	16.9	299-00		37.9	292 00
	21.0	296-30		37.9	288 30
	23.6	300-30		41.4	273 00
	29.4	295-00		43.4	289 00
	31.8	296-30		41.8	292 30
	34.6	295-00		44.5	296 00
	35.5	296-30	38	49.3	297 30
	34.8	301-00	40	52.0	305°00'
	36.8	302 00		45.3	309 30
	40.4	301-30		32.9	307-30
52	51.0	305-00		24.6	311-00
H1 48 42.17		1A+	C7		37.37
38	2.6	300°00		22.8	314 00
	8.7	351-30		16.3	315 30
Shaft	10.0	335-30		16.7	327 00
"	7.2	312-00		9.9	341 00
"	11.2	301-30		10.5	33 00
"	13.8	318-00		11.6	70-00
38	15.7	313-00		15.5	59 30
	19.1	311-30		21.0	72 30
	25.8	302 30		22.4	68 00
	36.8	303 00		25.4	77.00
38	38.4	298 00	40	29.9	78 00

H.I. = 48
A? 17

At G 7

40	36.7	87°00			37.37
	37.9	86-00	32	44.3	276
	38.0	83-30	32	42.2	272-30
	39.4	85-00	32	42.9	280
Concrete	41.3	83.30	32	35.3	278-30
"	46.2	97-00	32	27.8	272
	46.7	100-30	32	22.6	261
40" Steel	47.8	100-00	30	24.6	258
36	24.6	289-30	30	29.8	278
	29.0	285.00	30	36.7	271-30
	32.9	279-30	30	37.7	267
	35.8	283-30	30	40.8	269
	38.8	283-00	30	43.2	266
	41.7	286-30	30	45	272
	44.0	286-30	30	49.0	270
	47.3	288-30	16		
	51.0	290-30			
34	23.3	268-30			
34	27.8	280			
34	29.7	275			
34	33.9	278			
34	40.8	283			
34	47.4	284			
34	46.8	276			
32	47.7	275			

H.I. = 53

425.21 At B8 419.91

18	10.0	95-30
	11.8	87-00
	11.9	77-30
18	15.1	75-30
20	17.0	79-00
	18.1	76-30
	16.6	79-30
	16.5	68-00
	14.2	71-30
	10.9	86-00
22	17.3	68-30
	16.6	66-30
	17.3	59°30
	15.2	62-00
	12.1	60-30
	12.2	72-30
Steel 24	22.2	78-30
Concrete	23.0	65-00
	22.0	57-00
24	19.7	58-00
	18.6	62-30
	15.6	54-00
	13.8	56-30
	10.0	

H! = .46

22.34		At D8			417.74
10	13.5	191	12	22.0	255
12/16 10	14.8	196	12	19.3	243-30
10	13.2	216-30	12	16.5	237-30
10	21.2	249	12	12.8	239
10	21.9	248-30	12	13.4	217-30
10	20.3	252	12	13.4	182
10	29.1	256	14	13.5	188-30
10	29.6	249	14	11.6	213
10	32.7	260-30	14	8.8	226-30
10	36.9	263-30	14	18.6	226-30
10	43.6	276	14	13.0	232
10	46.1	262	14	12.0	248
10	50	258	14	16.0	250
10	53.5+	253-30	14	18.9	244
12	49.0	267	14	20.4	249-30
12	48.1	270	14	20.8	258
12	47.5	280-30	14	24.0	257-30
12	38.6	273	14	26.4	261
12	34	263-30	14	24.6	266
12	31.6	263	14	21.2	266
12	30.8	254-30	14	27.0	268
12	29.3	262	14	29.3	267-30
12	25.3	254	14	29.6	264
12	22.3	249-30	14	31.4	266

22.34		At D8			417.74
14	33.3	270-30	Rc 16	6.3	210
14	34.9	271-30	Rc 18	7.3	211-30
14	45	281	" 18	10.8	208
16	45.2	284-30	" 18	12.4	202
16	38.9	281	" 18	10.7	198-30
16	36.8	277-30	(19)	10.4	205
16	33.6	276-30	18	12.3	272-30
16	31.5	272	18	17.4	270-30
16	31.2	272-30	18	20.4	276-30
16	29.9	268	18	20.2	265
16	25.	269	18	22.5	261
16	23.8	262	Rc 18	17.9	252-30
16	23.7	261	18	23.9	261-30
16	21.7	258-30	18	24.6	269
16	20.3	258-30	18	29.5	268
16	19.9	249	18	30.8	272
16	19.2	246-30	18	33.0	279
16	16.7	249	18	38.5	283-30
16	16.9	257	18	45.6	287-30
16	13.0	262	20	45.2	289
16	4.4	257	20	38.8	287
Rc 16	12	187	20	35.1	286-30
" 16	14.2	198	20	30.4	288
" 16	10.7	211-30	20	25.8	282
			20	17.1	288-30

22.34		At 8			47.74
	20	10.7	299		
RC	20	18.7	275		
RC	20	22.3	273		
RC	20	23.8	263		
RC	20	25.9	268		
RC	20	29.4	268		
RC	20	30.3	272		
RC	20	30.2	276-30		
RC	20	27.5	277-30		
RC	21	27.4	271		
4.95					
34.37		At 7			29.42
22	30.2	125		22	23.9	253
22	23.7	136-30		22	24.5	258-30
22	16.7	139-30		22	28.0	258
22	19.9	150		22	29.5	263
22	20.2	155.30		22	30	269
22	16.1	164		22	32	266-30
22	18.8	166-30		22	36	277
22	17.6	173-30		22	38.0	270
22	16.0	189		22	42.0	267-30
22	15.3	203		22	45.8	262
22	16.3	211		22	48.9	260
22	17.6	222-30				

4.95

34.37		At 6	7		29.42
24	5.0	270	24	16	172-30
24	4.7	273	24	12.4	180-30
24	4.0.7	273	24	13.5	163 30
24	3.8.9	280	24	16.1	156
24	3.6.9	279-30	24	13.5	142-30
24	3.6.6	278	24	16.2	132
24	3.4.3	279	24	17.8	133
24	3.5.0	276-30	24	21.5	128
24	3.2.4	273	26	28.7	114-30
24	3.1.3	270	26	19.1	110
24	30.2	270-30	26	17.3	133
24	29.2	261	26	13.0	127-30
24	24.6	264	26	11.5	131-30
24	23.3	253	26	8	142
24	22.5	251	26	11.8	157
24	20.1	253	26	11.9	171-30
24	18.9	246-30	26	9.0	187
24	14.2	240	26	8.7	194-30
24	14.4	226	26	10.9	198
24	13.2	216-30	26	9.9	206
24	11.9	203	26	12.0	206
24	14.3	191	26	11.1	218
24	16.0	185-30	26	12.2	223
24	16.3	177-30	26	13.2	243

26.22
30

34.37		19+E7				29.42
30 28	26	15.4	24.30	RC 28	25.3	216
	26	18.9	248	28	18	263
	26	19.6	257-30	RC 28	18.7	253
	26	23.6	256	28	15.4	244.30
	26	24.4	263	28	13.2	267
	26	26.3	268	28	9.0	246
	26	26.8	265	28	6.8	223-30
	26	28.8	263	28	4.4	174
	26	29.2	266-30	28	8.7	119
	26	26.6	271	28	11.6	131
	26	26.1	274	28	13.2	126
	26	27.6	282	28	14.0	104-30
	26	34.2	283-30	28	18.4	89.
	26	39	280	28	25.1	105
	26	46.8	280	28	32.5	111
	26	49.0	280	RC 28	7.9	175
	28	48.7	284	RC 28	8.5	196
	28	44.5	283	RC 28	9.0	209.30
	28	44.2	289	RC 28	10.6	211
	28	41.5	289	RC 28	89	220
	28	38.5	296	RC 28	6.9	207
	28	31.7	291-30	RC 28	6.6	183-30
	28	24.0	277-30			
	28	22.5	266			
	28	20.9	260			

	+	H.I.	−	Elev.	
	0.23	486.80		486.57	
T.P.	1.80	476.19	12.41	474.39	
T.P.	0.20	464.57	11.82	464.37	
T.P.	1.03	452.77	12.83	451.74	
T.P.	1.45	441.66	12.56	440.21	
T.P.	1.04	430.34	12.36	429.30	
T.P.	2.35	420.02	12.67	417.67	
T.P.	2.35	410.65	12.73	408.30	
			8.47	401.18	BM No. 1.
T.P.	1.57	399.46	12.76	397.89	
T.P.	0.38	386.85	12.99	386.47	
T.P.	0.46	374.53	12.78	374.07	
	2.57	371.81	5.29	369.24	BM No. 2.
			0.55	371.26	
	0.35	371.65		371.30	BM No. 3.
	1.87	372.73	3.79	367.86	" 3.
	8.10	378.58	2.25	370.48	
			0.99	377.59	BM No. 4.
	11.74	382.22		370.48	TP
	12.46	394.33	0.35	381.87	
	12.37	406.22	0.48	393.85	
	11.57	417.11	0.68	405.54	
	11.98	428.79	0.30	416.81	
	11.32	439.89	0.24	428.55	

+	H.I	−	Elev
	439.89		
8.02	447.46	0.47	439.42
		6.63	440.83

BM. 5.

Dilley = Level
Bubb = Notes
Fisher - Rod.
8/23/17

44.

	Levels	Coord.	Intersects		
I-4	9.60	50.19		40.59	TP
H 5			13.24	36.95	
G 5			10.88	39.31	
F 5			6.94	43.25	
E 5			3.97	46.22	
D 5			0.99	49.20	
F 4			0.05	50.14	
G 4			3.48	46.71	
H 4			6.10	44.09	
I 3			0.78	49.41	
TP	17.93	63.066	.056	50.134	
C 5			8.21	54.86	
B 5			2.80	60.27	
D 4			3.81	59.26	
E 4			9.81	53.26	
E 3			0.594	62.472	TP Hub
F 3			3.87	59.20	
G 3			8.0	55.07	
H 3			11.16	51.91	
I 2			6.66	56.406	Check
H 2			4.05	59.02	
	17.55	75.022		62.472	Hub E 3
C 4			11.81	63.21	
C 3			3.39	71.63	

Dilley - Level
Bub - Notes
Fisher - Rod.
8/23/17

AA

	Levels	Coord.	Intersection		
I-4	9.60	50.19		40.59	T.P.
H 5			13.24	36.95	
G 5			10.88	39.31	
F 5			6.94	43.25	
E 5			3.97	46.22	
D 5			0.99	49.20	
F 4			0.05	50.14	
G 4			3.48	46.71	
H 4			6.10	44.09	
I 3			0.78	49.41	
T.P.	13.93	63.066	.056	50.134	
C 5			8.21	54.86	
B 5			2.80	60.27	
D 4			3.81	59.26	
E 4			9.81	53.26	
E 3			0.594	62.472	T.P. Hub
F 3			3.87	59.20	
G 3			8.0	55.07	
H 3			11.16	51.91	
I 2			6.66	56.406	Spad
H 2			4.05	59.02	
	17.55	75.022		62.472	Hub E 3
C 4			1.81	63.21	
C 3		✓	3.39	71.63	

	Levels	Coord	Intersections		
D.3		75.0 ✓	7.81	67.21	
G-2			17.05	62.97	
F ✓			10.41	64.61	
E ✓			5.41	69.61	
D-✓			2.13	7✓.89	
F1 ✓			4.34	70.68	
G1			7.61	67.41	
H1			10.46	64.56 ✓	
I1			11.10	63.9✓ ✓	Check
I00			6.80	68.2✓ ✓	"
H00			4.76	70.26 ✓	
G00			1.24	73.78	
P	12.50	87.14	0.38	74.64	Rock
B4			11.3✓	75.8✓	
B3			8.21	78.93 ✓	
B✓			4.46	82.68✓ ✓	
C✓			8.34	78.80	
C1			3.49	83.65	
D1			8.17	78.97	
E1			12.5✓	74.6✓	
F00			8.19	78.95	
E00			4.07	83.07	
P	12.77	99.81	0.10	87.04	Rock
B.M.			4.88	494.93	Rock on Basin
		✓			

Checked

8/23/17

46

Levels Coord Intersections

	9.80	96.84		287.04
D 00			8.19	88.65
C 00			7.63	89.21
B 00			2.84	94.00
B 1			9.27	87.57
A 1			8.70	88.14
A 2			17.35	84.49
M 2			12.96	83.88
N 2			8.12	88.72
O 2			3.59	93.25
P 3			5.88	90.96
Q 3			3.97	92.87
O 3			9.38	87.46
M 1			8.01	88.83
N 1	17.58	507.73	1.69	95.15
A 00			10.64	97.09
M 00			5.68	502.05
N 00			4.68	503.05
O 00			1.13	06.60
P 1			2.51	05.22
O 1			7.07	00.66
P 2			9.47	98.26
Q 2			4.30	03.43
R 2			0.35	07.38

F. Rock

F.

Cofried

F on hub

8-23-17

A7

	Levels	Coords	Intersections		
		507.73			
~~P~~		12.74	519.49	0.98	506.75	Rock
Q1				7.19	512.30	
R1				2.86	16.63	
~~P~~ 00				7.34	17.15	
Q00		10.34	28.39	1.44	18.05	P. hob.
R00				2.64	25.75	
		10.92	94.80		83.88	TP M2
A3				11.60	83.20	
A4				11.94	82.86	
A5				12.14	82.66	
M3				11.45	83.35	
N3				11.38	83.42	
R3				4.98	89.82	
~~A~~		0.20	87.38	12.62	82.18	
M4				2.51	79.87	
N4				5.07	77.31	
O4				3.40	78.98	
O5				9.47	72.91	
N5				13.23	69.15	
M5				12.00	70.38	
~~A~~	✓	1.99	72.48	11.89	70.49	Rock
A6					68.99	Hand Level

Adjusted

8/23/17

Levels Coord Intersections

		72.48			
M 6			4.62	67.86	
N 6			11.43	61.05	
O 6			8.50	63.98	
T.P.	0.07	60.13	12.42	60.06	Rock
O 7			4.58	55.55	
N 7			9.77	50.36	
A 7			12.14	47.99	A 7 Good for all Cont up to 4.92
T.P.	3.73	51.24	12.62	47.51	Rock
M 7-4' N			13.43	37.81	
N 7-15 3/4' N			9.99	41.25	
O 7-16' N			4.30	46.94	
O 8-15 1/8' East			12.37	38.87	
T.P.	0.61	39.67	12.18	39.06	Rock
P 8			4.97	34.70	
O 8			8.53	31.14	
T.P.	9.50	36.55	12.62	27.05	Rock 4.5 S.W. of N.8
N 8			11.25	25.30	
A 7-6' N				39.21	Hand Level
T.P.	1.32	32.84	5.03	31.52	
A 7-16' N			6.92	25.92	
T.P.	1.85	24.95	9.74	23.10	
A 8	✓		7.87	17.08	
A 8-3' N			9.15	15.80	

Copied

Cont P35, Book No. 4

8/24/17

19.96		At G8.			4155
10	20.9	139-30	12	15.6	139
10	16.8	141	12	13.5	137
10	16.4	217	12	13.5	156
10	14.5	234-30	12	~~16.5~~ 12	165
Rc 10	20.7	229-30	12	12	178-30
" 10	17.0	203	12	9.3	174
" 10	17.7	190	12	10.3	195-30
" 10	18.4	165-30	12	8.9	194
" 10	22.3	155-30	12	10.2	213
" 10	22.5	172	12	12.9	234
" 10	21.6	189	12	11.4	255
" 10	23.8	190	12	14.3	276
" 10	25.1	201	12	21.2	264-30
" 10	27.9	211	12	22.8	275
" 10	24.7	217	12	22.4	282-30
" 10	26.4	226	12	24.8	285-30
" " 10	22.1	234	12	26.4	280-30
" " 12	19.8	200	12	31	283
" " 12	20.2	219	12	32.4	290
" " 12	25.3	99	12	35	285
12	22.3	111	12	34.1	284-30
12	23.2	118	12	32.4	286-30
12	21.8	126	12	31.0	284
12	19.6	130	12	33.5	288

19.96			At G8			4155	
Rc 12	35.9	285°	Rc 14	14.7	273		
" 12	36.9	281	Rc 14	21.4	264		
" 12	37.2	284	" 14	22.5	273		
" 12	36.0	284	" 16	20.2	284		
12	30.5	271-30	" 16	19.4	271-		
12	41.0	286-30	" " 16	21.7	271		
12	38.2	289	14	7.2	245-		
12	38.3	291-30	14	8.3	248	Rc	
12	40.5	292	14	10.5	251	Rc	
12	40.3	298	14	9.6	241	Rc	
12	50	298	14	7.0	225	TR	
14	49.1	304-30	14	5.3	183-		
14	45.3	301	14	6.0	147		
14	35.9	296-30	14	6.8	127		
14	33.5	300-30	14	7.3	93-30		
14	28	296	14	11.1	109		
14	21.5	292	14	11.9	124		
14	15.7	289	14	17.2	116-30		
14	26	296	14	15.2	107		
14	21.9	291	14	20.6	95		
14	20.8	286-30	14	19.0	75-30		
14	21.8	286-30	14	23.2	69		
14	21.7	282	14	24.7	58-30		
14	18.3	288	14	32	75-		

8/24/17 50

19.96		17 / G 8			415.51
16	28.7	63-30	16	41.3	299-30
16	26.5	48	16	44.4	301½
16	26.6	55	16	47.5	307
16	16.8	62	16	48.5	310
16	14.0	72	18		
16	8.8	84			
16	6.0	65			
16	20	56-30			
16	1.0	112			
16	2.3	343			
16	5.9	326			
16	9.2	318			
16	10.2	319			
16	10.5	302			
16	15.3	295			
16	19.0	295			
16	22.2	291-30			
16	24.5	301-30			
16	26.7	300			
16	29.2	301			
16	31.8	302.30			
16	35.4	305			
16	36.7	301-30			
16	39.1	302			

28.72		A / G 7			423.77
18	31.1	112	20	45.3	296½
18	24.5	110	20	39.5	292½
18	17.7	104.5	20	32.9	289½
18	19.7	181½	20	30.1	293½
18	21.1	145½	20	32.6	292
18	21.9	160	20	27.2	278
18	17.5	173	20	32.1	275
18	15.1	199	20	22.6	275
18	17.2	202	20	24.8	261½
18	19.2	220½	20	27.0	262
18	19.8	227½	20	20.1	264½
18	19.9	239	20	19.7	256½
18	20.2	246	20	18.9	243
18	23.8	244½	20	14.0	228
18	24.7	251	20	14.4	222½
18	27.5	250½	20	18.9	231.30
18	31.1	264	20	17.9	225.30
18	35.6	265½	20	13.3	189
18	36.5	267.30	20	12.4	180
18	34.2	273	20	14.7	178
18	36.6	274½	20	16.5	171
18	34.2	282	20	16.6	147-30
18	31.2	285	20	13.8	137-30
18	46.3	291	20	15.3	173

8/24/17 51

28.7		AT G7			A23.77
20	16.0	87	24	42.3	308-30
20	19.2	103-30	24	32.7	307
20	26.5	105	24	28.5	304
20	28.8	108-30	24	24.4	310
22	9.2	187-30	24	130	298
22	10.5	206-30	24	6.1	332
22	11.8	206	24	4.0	311
22	13.9	219	24	11.7	299
22	13.1	229	24	18.0	287
22	14.9	236	24	17.6	287-30
22	15.8	244-30	24	19.3	282
22	16.3	243	24	15.6	264-30
22	17.4	242	24	16.0	260-30
22	16.7	248-30	24	11.1	258-30
22	17.3	251-30	24	8.7	256
22	18.7	252	24	3.6	211
22	19.3	259	RC 24	8.6	247-30
22	16.7	264-30	RC 24	11.9	247
22	21.3	284	RC 24	12.8	233-30
22	26.0	282	RC 24	14.9	239-30
22	27.4	284-30	" 24	15.5	250-30
22	30.	285	" 24	11.2	258-30
22	28.4	301-30	T.R 25.4	13.7	241
22	29.8	297	25.8	11.0	270
22	35.3	299-30			
22	42.4	302			

26	87	10			
26	126	50			
26	125	316			
26	145	345-30			
26	171	337-30			
26	214	319			
26	26	329-30			
26	26.2	313-30			
26	30	312.30			
26	31.3	317			
26	34.5	316-30			
26	36	318			
26	42.9	312			
A1 = 455	39.53	AT F6			34.98
28	29.2	248-30	30	49.5	277-30
28	29.1	252-30	30	44.0	276
28	27.4	256	36	37.8	280.30
28	31.	262-30	30	35.6	274
28	33.1	265	30	21.6	263-30
28	32.3	267	30	19.5	256
28	35.0	271-30	30	RC 29.1	264-30
28	39.7	274	30	" 25.9	261-30
28	40.2	274	30	" 23.9	252
28	49.9	275	30	" 28.3	259-30
			30		

H1 = 3953 | At F6. | 3498

30	10.2	264	32	24	273
30	8.3	251	32	27.8	281
30	9.6	224	32	42.4	284
36	9.0	197	32	47.3	283
30	11.2	188	34	45.4	285
30	14.3	170	34	46.3	289
30	21.4	164	34	43.5	288-30
30	25.6	165	34	43	287-30
30	27.7	161	34	38.2	290-30
30	28.9	152-30	34	37.3	286-30
30	32.2	147	34	35.8	290
30	32.6	144-30	34	29.7	289
30	33.7	144	34	15.7	297-30
30	34.4	141-30	34	9.6	298-30
30	32.8	137	34	2.5	231
30	35.5	134	34	4.0	141
32	28.8	132-30	34	16.6	120
32	22.3	141	34	19.2	124
32	25.1	146	34	26.2	122-30
32	24.5	149	34	29.1	126-30
32	16.7	145-30	34	32.1	120
32	13.6	285	36	19.2	312
32	18.8	277-30	36	21.9	301
32	20.9	271-30	36	26.6	302-30

8/24/17

H.1 = 3953 | At F6 | 3498

36	28.9	297-30
36	30.1	293-30
36	33.4	297
36	33	295
36	34.6	293
36	36.6	293
36	40.1	296
36	43.8	295
36	47.8	295
38	48.3	300-30
38	47.1	302-30
38	45.2	301
38	43.2	304
38	40	302
38	36.1	307
38	31.1	302
38	25.8	309
38	23.4	319-30
38	19.2	321
38	28.1	90-30

50.85

H.1463 | At E5 | 46.22

40	19.4	181	
40	20.7	238-30	
40	40	266-30	
40	46.1	270	
40	50	272	
40	53	265-30	R. C.
40	49.1	266	" "
40	48.9	263-30	
40.7	49.7	265	
42	48.4	276	
42	36.6	272	
42	30.5	265-30	
42	19.8	257	
42	16.3	255	
42	15.5	154-30	
42	16.9	137	
42	21.7	127-30	
42	29.7	132	
42	33.4	127	
42	40.5	130	

50 85		AT E 5			46.22
44	36.9	119	46	13.8	108
44	27.5	112-30	46	20.2	99
44	15.9	114	46	26.6	101
44	8.3	171	46	30.2	99-30
44	4.8	196	46	38.1	110
44	14.5	264-30	48	25.2	96-30
44	19.6	267-30	48	22.4	89
44	28.7	278	48	18.3	88
44	34.2	287	48	16.8	88-30
44	38.0	289	48	7.4	74-30
44	47.8	282-30	48	6.2	357
46	50.2	295	48	9.9	352-30
46	45	299-30	48	10.0	333
46	39.3	299	48	14.4	318
46	36.0	302	48	19.3	311-30
46	24.2	291	48	18.0	317-30
46	19.3	290	48	22.	315-30
46	15.6	281	48	24	310
46	11.2	289	48	30.5	305
46	12.3	290	48	36.8	309
46	10.3	313	48	40.3	305
46	5.4	280	48	46.7	305-30
46	0.6	253			
46	4.5	132			
46	7.0	107			

50 85		AT E 5	46.22
50	47.2	314-30	
50	34.3	314	
50	29.5	320	
50	20.7	329-30	
50	17.5	329-30	
50	13.9	333-30	
50	13.8	353	
50	4.8	50	
50	18.	64	
50	26.2	89	

H1A15	64.42	AT B 5			60.27
54	45.1	152-30 Gr.	54	20.4	230
54	32.6	146	54	17.2	242
54	19.0	172	54	19	246
54	21.2	182	54	25.9	255
54	19.0	187-30	54	27.8	253
54	19.5	196-30	54	30.8	259-30
54	19.8	206	54	27.7	266
54	17.7	211	54	32.	288
54	17.4	217	54	41.8	288-30
54	18.0	221-30	54	46.2	295
54	20.1	222	54	51	289
54	18.5	231	54		

See Book #4 Pg 9

8/11/17

Sand Estimate

Lt

00							4' Fines 4' Mud			
1+00						5.8 3.3	3.8	2.9 50	5.4 100	
2+00			4.0 200	4.0 150	4.0 100	9.0 50	7.3	4.2 50	4.1 100	
3+00	7.0 340	2.0 300	4.0 250	4.7 200	6.1 150	~~No Bot~~ 9.0 100	6.1 50	6.4	Mostly Fine Sand 5.5 35	
4+00	5.4 360		4.0 300	4.0 250	7.1 200	6.7 150	5.6 100	6.7 50	4.8	7.1 30.0
5+00	5.4 380	6.1 350	6.8 300	5.4 250	Probably Mud from Lt 8.0 200	7.5 150	6.8 100	~~No Bot~~ 9.0 50	6.3	5.8 15
6+00			7.5 305	5.7 250	5.6 200	7.5 150	6.5 100	8.3 50	8.0	8.0 50

Streak Mud 18" Deep

Rt

Fines No Bot.

			3.5 50	4.0 100	9.0 150					
			No Bot Lots Mud		Mostly Mud					
			9.0 150	7.0 200						

Sand Estimate

Lt

℄

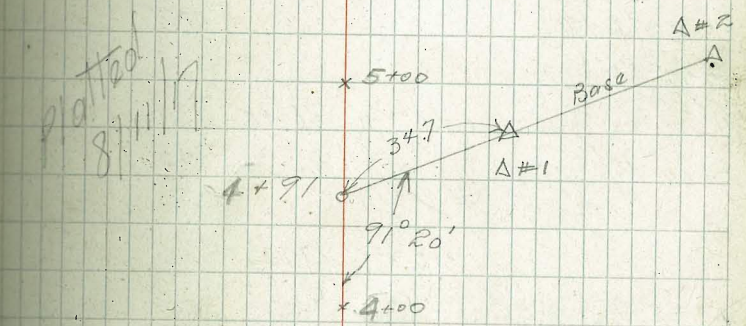
(No Rod)

7+00		3.8 / 230	5.5 / 200	6.1 / 150	9.0 / 100	7.7 / 50	2.9	6.2 / 40	5.1 / 50
8+00		00 / 215	3.8 / 200	6.7 / 150	7.6 / 100	7.7 / 50	5.4	2.2 / 50	4.5 / 100
9+00	00 / 350	5.7 / 300	6.4 / 250	7.7 / 200	4.0 / 150	6.8 / 100	6.3 / 50	7.0	4.6 / 50

Hole #10	2' Rt	1+91
" #11	51' Lt	5+38
" #14	141' "	4+00
" #13	141' "	3+70
" #12	28' "	8+11

Rt.

		3.7 / 100	3.0 / 115					
		3.3 / 150						
		3.8 / 100	3.0 / 150	2.8 / 200	6.5 / 250	1.0 / 300	2.6 / 350	1.8 / 400



Tie to Line of X sections for Sand Estimate

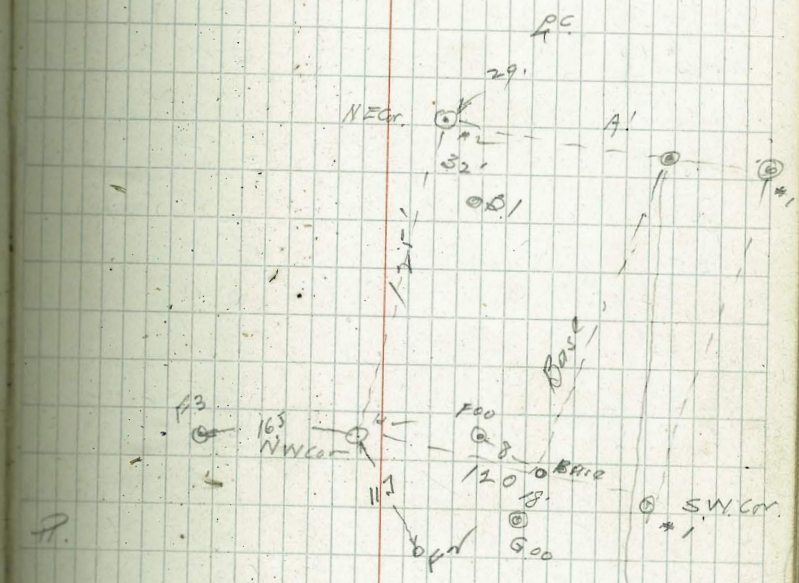
8/21/17

Excavation Estimate

Tower Base

	38	49869		492.89
0+25 #1 upper line			4.8	493.9
0+25 Base			14.7	484.0
0+50 Base			7.5	491.2
0+75 "			4.5	494.2
0+50 #1			1.0	497.7
P.			0.2	498.7
0+00 #1 SW Cor			11.7	487.0
	130	511.47		
0+75 #1			5.5	506.0
1+00 Base			9.2	502.3
1+25 "			5.5	506.0
P	102.0	21.4	0.5	511.2
1+00 #1			7.7	13.7
			1.0	20.7
	238	48933		487.00
1+25 Base NE Cor.			3.8	85.5
1+00 #1			3.4	85.9
0+75 #1			9.6	79.7
P.	00	7866	10.7	78.66
0+50 #1			5.2	73.5
0+25 #1			9.5	69.2
0+00 #1			15.5	63.2
0+00 #1 Base	00	487.0	8.8	487.0 / 478.2

BM on Concrete Basin



Vert. ∠ - -13°30'-

Levels for Sand Tram.

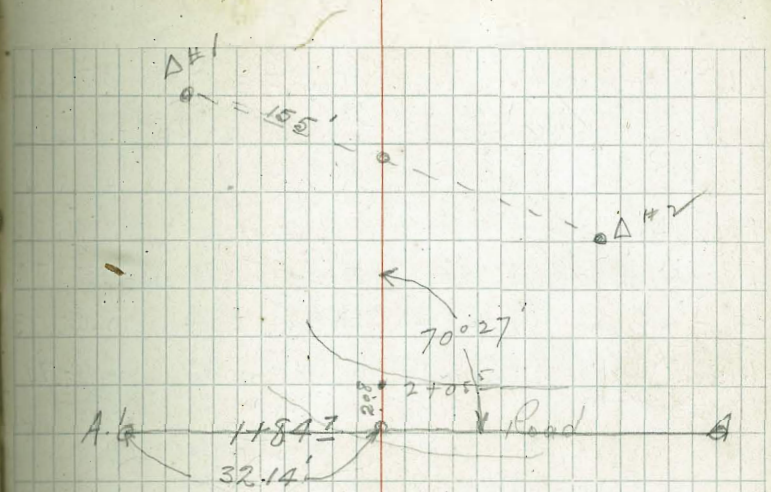
		3.95	4.95		487.00
2+55				5.0	85.9
Sta				Rod.	
	Note - All Notes on Slope				
0+00		+13°30'		00	
+50		" "		6.4	
1+00		" "		9.2	
+25		" "		10.7	
+50		" "		10.5	
+88		" "		9.4	
2+00		" "		6.3	
2+55		" "		5.0	
+10		-13°30'		2.1	
+38		" "		6.5	
+37		" "		4.0	
+50		" "		6.8	
+77		" "		4.6	
3+00		" "		5.6	
+20		" "		2.0	
3+50		" "		6.8	
4+00		" "		5.6	
+28		" "		2.1	
+55		" "		6.0	
+84				6.2	
5+00				3.1	

Edge Road

Sand Tram Line

Sta				Rod.
5+70				2.0
+66				3.8
+73				6.0
+85				10.3
6+00				8.8
+70				5.6
+84				2.6
7+00				0.7
	79.93	79.23		37.30
7+00			5.14	74.09
+00			5.14	74.1
7+73			1	

Sta	Fill	Sta	Fill	Sta	Fill
0+25	1.8	3 -	4.8	50	4.1
+50	4.1	25	4.0	75	8.6
+75	6.5	50	6.0	6 -	7.9
1 -	8.4	75	4.2	25	5.5
+25	9.9	4	4.1	50	2.5
+50	9.0 7.5 over rock	25	3.5	75 line	
+75	9.9	50	4.7	Grade 00 9|13|18	
2	6.6	75	4.9	run 25 24%	
25	4.5	5	1.9		
50	4.2	25	2.2		
75	4.9				



18 m.

Same Ele 10' farther - 23' farther = Ork Bed

Ork Bottom.

List of BMs.

USGS + in Brass Cap in Boulder E End Dam 486.569
#1 Nail in Boulder ½ way down Slope below W. " Spillway 440.24
#2 " " Ledge 20' above Bottom Drain W side below #1 401.22
#3 Bolt in Rock Ledge W Side canyon 81' W Core Wall 371.30
#4 Bolt " Flat Ledge W. Side Canyon 50' below old Diverting Dam 377.59
#5 Bolt in Power Pole to Rt of Road below Tool House 440.72
#6 Rock West end Basin below Tool House 494.89

KEITH'S RAILROAD CURVE TABLES.

Published by KEUFFEL & ESSER CO., New York.

HOW TO USE KEITH'S TABLES.

EXAMPLE.

Wanted a Curve with an Ext. of about 12 ft. Angle of Intersection or I. P. = 23° 20′ to the R. at Station 542+72.

Ext. in Tab. IV opposite 23° 20′ = 120.87
120.87 ÷ 12 = 10.07. Say a 10° Curve.

Tan. in Tab. IV opp. 23° 20′ = 1183.1
1183.1 ÷ 10 = 118.31.

Tab. V correction for A. 23° 20′ for a 10° Cur. = 0.16
118.31 + 0.16 = 118.47 = corrected Tangent.

(If corrected Ext. is required find in same way)
Ang. 23° 20′ = 23.33° ÷ 10 = 2.3333 = L. C.

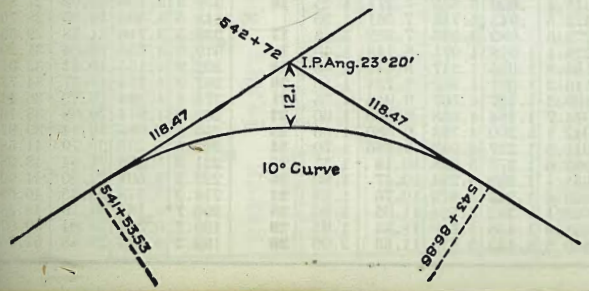
2° 19½′ = def. for sta.	542	I. P. = sta.	542+72
4° 49½′ = " " "	+50	Tan. =	1.18.47
7° 19½′ = " " "	543	B. C. = sta.	541+53.53
9° 49½′ = " " "	+50	L. C. =	2.33.33
11° 40′ = " " "	543+	E. C. = Sta.	543+86.86
	86.86		

100 − 53.53 = 46.47 × 3′ (def. for 1 ft. of 10° Cur.) = 139.41′ =
2° 19½″ = def. for sta. 542.

Def. for 50 ft. = 2° 30′ for a 10° Curve.

Def. for 36.86 ft. = 1° 50½′ for a 10° Curve.

(These tables are published in Field Books of
KEUFFEL & ESSER Co., New York, N. Y.)



DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

ROADWAY 14 FEET WIDE. SIDE SLOPES 1½ TO 1.

FOR SINGLE TRACK EMBANKMENT.

	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	7.0	7.2	7.3	7.5	7.6	7.8	7.9	8.1	8.2	8.4	0
1	8.5	8.7	8.8	9.0	9.1	9.3	9.4	9.6	9.7	9.9	1
2	10.0	10.2	10.3	10.5	10.6	10.8	10.9	11.1	11.2	11.4	2
3	11.5	11.7	11.8	12.0	12.1	12.3	12.4	12.6	12.7	12.9	3
4	13.0	13.2	13.3	13.5	13.6	13.8	13.9	14.1	14.2	14.4	4
5	14.5	14.7	14.8	15.0	15.1	15.3	15.4	15.6	15.7	15.9	5
6	16.0	16.2	16.3	16.5	16.6	16.8	16.9	17.1	17.2	17.4	6
7	17.5	17.7	17.8	18.0	18.1	18.3	18.4	18.6	18.7	18.9	7
8	19.0	19.2	19.3	19.5	19.6	19.8	19.9	20.1	20.2	20.4	8
9	20.5	20.7	20.8	21.0	21.1	21.3	21.4	21.6	21.7	21.9	9
10	22.0	22.2	22.3	22.5	22.6	22.8	22.9	23.1	23.2	23.4	10
11	23.5	23.7	23.8	24.0	24.1	24.3	24.4	24.6	24.7	24.9	11
12	25.0	25.2	25.3	25.5	25.6	25.8	25.9	26.1	26.2	26.4	12
13	26.5	26.7	26.8	27.0	27.1	27.3	27.4	27.6	27.7	27.9	13
14	28.0	28.2	28.3	28.5	28.6	28.8	28.9	29.1	29.2	29.4	14
15	29.5	29.7	29.8	30.0	30.1	30.3	30.4	30.6	30.7	30.9	15
16	31.0	31.2	31.3	31.5	31.6	31.8	31.9	32.1	32.2	32.4	16
17	32.5	32.7	32.8	33.0	33.1	33.3	33.4	33.6	33.7	33.9	17
18	34.0	34.2	34.3	34.5	34.6	34.8	34.9	35.1	35.2	35.4	18
19	35.5	35.7	35.8	36.0	36.1	36.3	36.4	36.6	36.7	36.9	19
20	37 0	37.2	37.3	37.5	37.6	37.8	37.9	38.1	38.2	38.4	20
21	38.5	38.7	38.8	39.0	39.1	39.3	39.4	39.6	39.7	39.9	21
22	40.0	40.2	40.3	40.5	40.6	40.8	40.9	41.1	41.2	41.4	22
23	41.5	41 7	41.8	42.0	42.1	42.3	42.4	42.6	42.7	42.9	23
24	43.0	43.2	43.3	43.5	43.6	43.8	43.9	44.1	44.2	44.4	24
25	44.5	44.7	44.8	45.0	45.1	45.3	45.4	45.6	45.7	45.9	25
26	46.0	46.2	46.3	46.5	46.6	46.8	46.9	47 1	47.2	47.4	26
27	47.5	47.7	47.8	48.0	48.1	48.3	48.4	48.6	48.7	48.9	27
28	49.0	49.2	49.3	49.5	49.6	49.8	49.9	50.1	50.2	50.4	28
29	50.5	50.7	50.8	51.0	51 1	51.3	51.4	51.6	51 7	51.9	29
30	52.0	52.2	52.3	52.5	52.6	52.8	52.9	53.1	53.2	53.4	30
31	53.5	53.7	53.8	54.0	54.1	54.3	54.4	54.6	54.7	54.9	31
32	55.0	55.2	55.3	55.5	55.6	55.8	55.9	56.1	56.2	56.4	32
33	56.5	56.7	56.8	57.0	57 1	57.3	57 4	57.6	57.7	57.9	33
34	58.0	58.2	58.3	58.5	58.6	58.8	58.9	59.1	59.2	59.4	34
35	59.5	59.7	59.8	60.0	60.1	60.3	60.4	60.6	60.7	60.9	35
36	61.0	61.2	61.3	61.5	61.6	61.8	61.9	62.1	62.2	62.4	36

Calculated by Julien A. Hall, M. Am. Soc. C. E.