Dr. #9 BLACK HAWK

1083

BOOK 4

LEVEL BOOK

370

LEVELS

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NEW YORK.

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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.

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	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.

REGISTERED
PROF. ENGR.

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FEB 27 '23
J. W. Esther
County Auditor

B.M.s Listed — Page 6-17

Checking Branches - Levels 18-67

Relocating Main - outlet to sta 37+35
Levels 126-133

Alignment of Main
New outlet to sta 37+35 150-152

Supplementary survey Brs 3R & 5R
from new outlets, Pp. 76-86

Johnson Levels outlet #2 Dist #12
creek to R.R. 154-155

Bench Marks. Dr. #9.

Main.	New Elev.	
B.M. #1.	50.00	Top of W. end of S. end of Concrete bridge.
B.M. #2.	51.73	Spike in root of Cottonwood tree near N.E. Cor. - N.W. ¼ - SW ¼ Sec 13.
B.M. #3.	57.60	Spikes in S. end of E. cap. of bridge between Secs. 14 & 23.
B.M. #4	✓	Top of boulder 84' S. of Sta. 72.
B.M. #5	65.30	Top of S. end of E. cap of bridge thru N ½ of Sec. 23
B.M. #6	66.45	Spikes in W. end of S. cap of bridge W. line Sec. 23
B.M. #7	✓	Spikes in S. end of E. cap. bridge S. of Sec. 22. (Bridge destroyed)
B.M. #8	✓	Top of N. end cement culvert on N. & S. road W. line Sec. 27

B.M.s Cont. - Main.

B.M.A	51.26	Spike in E. end of N. cap of bridge on N.&S. Hwy.
B.M.B.	57.90	Extreme W. willow in row at approx sta 37+00 (old survey.)
B.M.C	63.25	Black boulder at pasture fence (old survey) corner, Approx. sta 70+00
B.M.D	71.09	Spike in corner post 200' E of Main on E&W. ¼ ℄.
B.M.E	70.37	Lath at N.&S. ℄ Approx 50' N. of Sta 1+00 Br & Left.
B.M.F	77.67	Spike at top of E. end of N. wing wall of Concrete bridge on Hawkeye Hwy.
B.M.G	79.57	Spike in Cor. post. SW cor NW¼ NE¼ Sec 27 Sta 163 Main. (Dont use)
B.M.H.	92.39	N.E. Cor. of E. end of concrete culvert at end of Main

BM #1	Br. 7 R.	76.52	✓
BM #2	Br 7R	76.00	
BM #3	Br 7R	80.55	
BM #1	Br 6 R	70.13	✓
BM #2	Br 6 R.	79.41	✓
BM #3	Br 6 R.	86.10	✓
BM #1	Br 8 R.	80.47	
BM #2	Br. 8 R.	91.27	

Large boulder approx 200' N. of Sta 21 Br 7R and 300' W. of N.&S. Rd.

Spike in root of S. of row willow stumps approx 100' N. of Sta 34 Br. 7 R.

Spike in E. end of N cap of bridge on Hwy. approx Sta 48+00 Br 7 R.

Spike in N. end of E cap of bridge N. of Sec 22 approx. Sta 19+50 Br 6 R.

N.E. Cor. of E end of concrete culvert S. side of Hwy. N. of Sec 22 Between Brs. 6 R. & 8 R.

Spike in root of N. of row willows running N.W. approx. Sta 7+ Br 7 R.

Extreme N.E. Cor, E. end of Concrete culvert N. side of Hawkeye Hwy S of Sec. 22

N.E. Cor. of E. wingwall of Concrete culvert at N. side of Hawkeye Hwy. N.W. Cor sec 27 & S.W. Cor. sec 22

BM #1	Br 5R	63.13	✓	Extreme N.E. Cor. of E. plank of Floor of W Bridge N. of Sec. 23 Sta 9 Br 5R
BM #2	Br 5R	67.69	✓	Spike in root of lone willow at property Corner - Sta 37+50 Br 5R
BM #3	Br 5R	73.69	✓	Spike in N. end of E. cap of bridge N.E. cor SW¼ NW¼ Sec 14
BM #4	Br 5R	88.48	✓	N.E. Cor. of E. wall of concrete culvert between Secs. 10 & 11 Sta. 88. Br 5R.
BM #5	Br 5R.	81.61	✓	N.E. Cor. N. wall conc. culvert N. of Sec 15. Sta. 10 Br K.R.
BM #6	Br 5R	81.46	✓	N.E Cor. N. wall Conc. Culvert N of Sec 15 - Sta 34 Br J R.
BM #1	Br 2R	73.83	✓	Spike in root of S. of row cottonwoods N. of Hwy approx Sta 19 Br. B.R.
BM #7	Br 5R	84.04	✓	Spike in E. of 2 Cottonwoods N. of Hwy - Sta 16 Br D.R.

B.M. #1 Br 3R	73.09	Highest point on large rock in field approx 100' N.E. Sta 20 Br 3R.
B.M. #1 Br 24	65.85	Spike in cor. post. S. end of Th. 250' E. of Sta 29+26 Br 24
B.M. #2 Br 24	75.12	Top of white rock in field 200' W. of plank culvert on Hwy at Sta 45 Br 24
	78.40	N.E. cor. of N. wall conc culvert on Hwy S. of Sec 13 - Sta 9+75 Br 6.4.
B.M. #3 Br 24.	89.11	N.E. cor. of N. wall conc. culvert on Hwy S. of sec 13 - Sta 21+25 Br 8.4.
B.M. #1 · Br 84	76.94	N.E. Cor of E wall conc culvert on Hwy E. of sec 22 - 100' N. of Sta 10+50 Br 84
B.M. #2 Br 84	85.26	Top of N. point of concrete base of steel corner post approx 50' W. of Sta 16 Br Q 4.

B.M. #1	Br 34	88.90	Spike in root of N. side of large cottonwood in S.W. cor. of grove. Approx. Sta. 14+25 Br. J L
B.M. #2	Br 34	77.67	N.E. cor. of N. wall conc. culvert on Hwy 5. of sec. 23 - Sta 54+50 Br 34
B.M. #3	Br 34	87.19	Spike in bottom of corner post S.W. cor. sec. 29

Checking Br. 7R.

70
48
118

May 25 1920
Hoff
Whalen

	B.S.	H.I.	-S	Elev.	
B.M.D	1.29	72.38		71.09	
Sta 17+43 Main			5.16	67.22	
T.P.	5.70	73.60	4.48	67.90	
	5.01		5.17?		
Sta 9			5.52	68.08	
T.P.	6.02	76.45	3.17	70.43	
	5.77	76.44	2.93	70.67	
Sta 18+77	6.11	77.90	4.66	71.79	
T.P.	4.77	77.90	3.32	73.13	
B.M.#1 Br. 7R.			1.38	76.52	Large boulder approx. 200' N. of Sta 21+00 and 200' W. of N.B.S.R.
T.P.	5.61	80.83	2.68	75.22	
	4.67	80.84	1.73	76.17	
Sta 34+00			5.45	75.39	
B.M.#2 Br. 7R	4.44	80.44	4.84	76.00	Spike in root of S. of row of willow stumps 100' N. of Sta 34
T.P.	4.86	80.44	5.26	75.58	
Sta. 39+00			5.05	75.39	
" 35+00			4.70	75.74	

Checking Br. T.R Cont.

	B.S	Ht. Ia.	- S	Elev
Sta 40+00	6.15	82.82	3.77	76.67
	5.14	82.82	2.76	77.68
B.M. #3 Br. T.R.	5.18	85.73	2.27	80.55
Sta. 41+78			4.39	78.43
Br. T.R. Sta. 2+14			4.19	81.54
B.M. #4 Br. T.R.	2.64	78.16		76.52
Sta 22			5.96	72.20
Sta 23			5.73	72.43
Sta 21			6.33	71.83
Sta 19			6.74	71.42

Spike in E. end of N. cap of Bridge
Sta 48+00

Ck. to Sta. 19. Sta 20 N.G. Sta 21 0.3(?) lower than orig. survey. Sta 220.59 lower & Sta 230.59 lower.

Adjust at Sta 21 — Reduce orig. elevations 1.60'.

Also Brs. S.R.-U.R.-Q.-T.R.

Checking Br. 6.R.

	B.S.	H.I.	-S	Elev.	
B.M.#5	4.79	70.09		65.30	
T.P.	5.37	70.64	4.82	65.27	
	4.96		4.42	65.67	
Sta. 10+75			6.30	64.34	
T.P.	4.41	71.90 (71.89)	3.15	67.49	
	3.87	71.88	2.63	68.01	
Sta 16			5.68	66.21	
B.M.#1 Br 6R	4.13	74.26	1.76	70.13	
T.P.	6.18	74.25	3.82	68.07	
Sta 19+62			6.07	68.18	old Elev 68.15
Sta 2	Br Q.R		5.06	69.19	
Sta 1	Br NR		1.35	72.90	
Sta 27	Br 6R		2.04	72.21	
Sta 28	Br 6R		0.85	73.40	73.53
Sta. 2	Br NR				
Sta 2+95	Br OR		3.47	70.78	
T.P.	9.14	80.52	2.87	71.38	
	8.66	80.52	2.39	71.86	

Spike in N. end of E. cap of bridge N. of Sec 22. Approx. Sta 19+50 Br. 6R.

Checking Br. O.R.

	B.S	H.I.	-S	Elev.	
		80.52			
B.M. #2 B.C.R.			1.11	79.41	
Sta 15	Br. O.R		2.35	78.17	
T.P.	6.12	82.01	4.63	75.89	
	5.35	82.00	3.85	76.67	
Sta 12+39	Br. O.R		5.84	76.16	
Sta 17+65			3.60	78.40	
T.P	5.62	~~84.15~~ (84.14)	3.47	78.53	
	5.17	84.13	3.04	78.96	
Sta 22			5.24	78.90	
T.P.	7.12	88.04	3.22	80.92	
	6.78	88.04	2.88	81.26	
Sta. 27			6.75	81.29	
Sta 29			5.43	82.61	
Sta 1	Br. N.R.		5.85	82.19	
Sta 3	Br. P.R.		4.65	83.39	82.33
B.M. #3 B.C.R			1.94	86.10	
Sta 7	Br. P.R		3.10	84.94	83.85

N.E. Cor. of E. wing Wall Concrete Culvert

S. side of Hwy N. of Sec. 22

Spike in root of N. of row willows

running N.W. approx. Sta 7+ Br. P.R

Checking Brs. O.-P.&W.R.

	B.S.	H.I.	-S.	Elev.		
		88.09				
Sta 33	Br. O.R		4.06	83.98	82.87	1.11
Sta 32	Br. O.R.		4.55	83.49	82.26	1.23
Last T.P	4.51	85.43		80.92		
	4.16	85.42		81.26	Old Elevs	
Sta 26	Br. O.R.		4.94	80.49	79.39	1.10
Sta 25			5.32	80.11	78.94	1.17
Sta 24			5.39	80.04	78.88	1.16
Sta 23			6.08	79.35	79.35	
Sta 22			6.57	78.86	79.00	

Relocating B.M.F.

B.M.E	5.48	75.85		70.37
T.P.	6.16	78.50	3.51	72.34
	5.99	78.51	3.33	72.52
B.M.F.	5.60	83.26	0.85	77.66
T.P	7.76	83.28	2.99	75.52

Check to Sta 23. Also Brs. O.R & N.R

Adjust from Sta 23 Br. O.R and Brs. P.&W.R. — Raise origional elevations 1.10'.

Checking Brs. 8R. & 9R.

	B.S.	H. I	- S	Elev.	
Sta 7+14	Br. 9R.	83.27	5.57	77.70	
Sta. 7			6.00	77.27	
Sta. 6+12			6.16	77.11	
B.M. 1 #Br. 8R.	4.91	85.38	2.80	80.47	
T.P.	4.15	85.37	2.05	81.22	
Sta 0+91	Br. 8.R.		4.66	81.72	
T.P	5.90	87.66	3.62	81.76	
	5.65	87.66	3.37	82.01	
Sta 20+79	Br. 8.R.		4.92	82.74	
Sta 21+75	" " "		5.13	82.53	old elev
Sta 19+50	Br. 9.R.		6.26	81.40	81.18
Sta. 20			6.02	81.64	81.43
Sta. 23			4.50	83.16	83.19
21			5.53	82.13	82.09
20			6.02	81.64	81.43
19+39			6.25	81.41	
19			6.52	81.14	81.07
18			6.75	80.91	80.95

Extreme N.E. cor. of E. end of Concrete culvert N. side of Hawkeye Hwy. N. of Sec. 27

Checking Brs. 8R.&9R. Cont.

	B.S.	H.I.	-S	Elev.	
		87.66			
T.P	9.74	92.33	5.07	82.59	
	9.35	92.34	4.67	82.99	
B.M 2 Br. 8.R.	2.71	93.98	1.07	91.27	
Sta 34+35 Br. 9.R.			5.10	88.88	
35+82 " " "			4.80	89.18	
T.P.	4.66	94.46	4.18	89.80	
	4.23	94.47	3.74	90.24	
Sta 38+79 Br. 8.R.			3.71	90.75	
Sta 36+82 " " "			5.14	89.32	
BM #17	1.98	93.25		91.27	
Sta 33 Br. 9.R.			5.81	87.44	86.02
" 32			6.16	87.09	85.73
" 31			6.54	86.71	85.37
" 29			7.30	85.95	85.32
			8.85	84.40	

85.27
2.15
88.42

N.E. Cor. of E. wingwall concrete culvert at N. side Hawkeye Hwy. N.W. Cor. Sec. 27

Checking Br. 9R Cont

			93.25			
T.P		2.28	89.60	5.93	87.32	
		2.31	89.60	5.96	87.29	
Sta	26	Br 9R		5.67	83.93	82.70
Sta	25			5.85	83.75	82.98
Sta	24			5.96	83.62	83.38
"	23			6.38	83.22	

Checks to sta 25.
Adjust from Sta 25 — Raise
origional elevations 1.30'

Checking Brs. SR. May 28 - '2

	B.S.	H.I.	−S	Elev		
B.M. 6	1.67	64.92		63.25		
Sta 4			4.54	60.38		
Sta 5	7.02	66.32	5.62	59.30		
T.P.	6.17	66.33	4.76	60.16		
B.M. #1 (Brs SR)	4.67	67.80	3.19	63.13		Extreme N.E. cor. of E. plank of floor on bridge 1880' E. of N.W. cor. Sec. 23.
T.P.	6.26	67.81	4.77	61.55		
T.P.	7.76	70.02	5.55	62.26		
	7.13	70.02	4.92	62.89		
Sta 15			8.35	61.67	60.84	.83
18			7.51	62.51	61.67	.84
B.M. #18	4.45	67.56		63.13		
Sta 8+30			7.05	60.53 (59.76)	59.76	.77
Sta 8+00			7.20	60.38	59.63	.75
Sta 7.			7.55	60.03 (59.27)	59.27	.76 Checks at Sta 6. Adjust from Sta 6 —
B.M. #18	3.80	66.93		63.13		Raise original elevations 0.80'
Sta 6			6.94	59.99	60.19	.20
Sta 5			7.62	59.31	59.44	

Checking Brs. SR

May 28-

	B.S.	H.I.	F.S.	Elev.
Last T.P.	6.20	68.46		62.26
	5.55	~~68.44~~		62.89
Sta 21			5.54	62.92
T.P.	5.77	69.50	4.73	63.73
	5.39	69.50	4.35	64.11
27+50			4.64	64.86
28			4.42	65.08
T.P.	6.42	71.49	4.43	65.07
	5.96	71.51	3.95	65.55
Sta 31			5.49	66.01
T.P.	5.43	72.76	4.17	67.33
	4.99	72.76	3.73	67.77
B.M.# 2 Br. S.R.			5.07	67.69
Sta 36			5.05	67.71
Sta 37+95			4.52	68.24
Sta 40	6.41	75.28	3.89	68.87
T.P.	5.55	75.27	3.04	69.72

Spike in root of lone willow #2

		H.I. 75.28		
Sta 45			4.01	71.27
Sta 47 T.P.	7.46	78.25	4.49	70.79
	6.39	.24 76.23	3.44	71.84
B.M. #3 Bar & R			4.55	73.69
Sta 50+83			5.79	72.45
T.P	9.11	82.47	4.93	73.31
	8.86	82.43	4.67	73.57
Sta 1+9 B.C.F.R.			5.66	76.76
T.P.	5.16	82.87	4.71	77.71
	5.25	82.88	4.79	77.63
Sta 6+49			6.11	76.77
T.P.	5.87	85.96	2.80	80.08
	5.32	85.97 85.98	2.22	80.66
T.P.	6.80	88.03	4.74	81.23
	6.16	88.02 88.01	4.12	81.85
Sta 77			7.21	80.81
" 80			5.34	82.68

Spike in N. end of E. cap of bridge
N.E. Cor. SW¼ NW¼ Sec 19.

	B.S.	H.I. 88.02	−S	Elev.
T.P.	5.54	89.56	4.00	44.02
	5.14	89.56	3.60	84.42
Sta 83+89			5.82	88.74
Sta 84			5.81	83.75
B.M.#4	Br SR		1.08	88.48
Sta 1	Br GR		5.75	83.81
Sta 2	" "		5.05	84.51
Sta 2	Br H.R		4.28	85.28

Establishing B.M.#5 Br. SR.

B.M.#3 Br SR	5.83	79.52		73.69
T.P.	10.16	87.44	2.24	77.28
	9.79	87.44	1.87	77.65
T.P.	2.11	86.29	3.26	84.18
	1.69	86.29	2.84	84.60
B.M.#5 Br SR	3.73	85.34	4.68	81.61
T.P.	5.09	85.33	6.05	80.24

N.E. cor. of E. wall Conc. Culvert
Bet. Secs. 10 & 11 – Sta 85 Br SR
Adjust Brs. G.R. & H.R. –
Raise original elevations 0.80'

N.E cor. of N. wall of Concrete
culvert. N. of sec. 15. Sta 10 Br SR.

Checking Brs. J.R. & K.R.

	B.S.	H.I.	-S	Elev
		85.38		
Sta 9+17	Br. K.R.		7.02	78.31
Sta 33+59	Br J.R.		6.47	78.91
B.M. #23			3.87	81.96
B.M. #20	6.54	80.23		73.69
T.P.	10.02	88.03 ~~90.03~~	2.22	78.01 ~~80~~.01
	9.62	88.02 ~~90.02~~	2.03	78.20 ~~80~~.20
T.P.	4.81	89 ~~91.50~~	3.34	84 ~~86.69~~
	4.57	89.50 ~~91.50~~	3.10	84 ~~86.93~~
Sta 15 Br II R.			6.76	82.74 ~~84.74~~
Sta 12+85			8.20	81.30 ~~83.30~~
			5.89	83.61 ~~85.61~~

97
82.74
.18

Sta 15 82.74
" 12+85 81.30
1.44

478

Adjust Brs. J.R.-K.R.-L.R. & M.R. –
Raise original elevations 0.80'
N.E. Cor. of N. wall of Concrete
Culvert N. of Sec 15 Sta 34 Br J.R.

S. end of corrugated culvert
approx. Sta 15 Br II R.

Checking Brs. 2R- R.&. D.R.-1R&AR

	B.S.	H.I.	-S	Elev.
BM #1	8.33	58.33		50.00
Sta 14+42	Br AR		4.69	53.64
T.P.	9.36	~~65.29~~ 65.27	2.40	55.98
	8.95	~~65.26~~	2.02	57.31
T.P.	12.73	76.55	1.45	63.82
	12.33	76.54	1.06	64.21
T.P.	9.84	84.72	1.67	74.88
	9.44	84.72	1.27	75.28
T.P.	1.35	79.27	6.80	77.92
	0.89	79.28	6.33	78.39
Sta 18+34	Br BR		7.00	72.27
BM #1 Pin 2R	8.91	82.74 82.73	5.44	73.83
T.P.	9.45	82.72	6.00	73.27
T.P.	8.41	~~89.26~~	1.86	80.85
	8.05	89.27	1.51	81.22
T.P.	5.69	87.13	7.83	81.44
	5.40	87.13	7.54	81.73

9

Br R.R. O.K.

Br. B.R. O.K.

Spike in root of S. of Row cottonwood N. of Hwy. approx. sta. 19+00 Br. B.R.

	B.S	H.I. 87.13	-S	Elev.	
Sta 27+59	Br 2R.		7.69	79.44	Br 2R. O.K.
T.P.	5.20	90.96	1.37	85.76	
	4.83	90.97	0.99	86.14	
B.M.#	4.60	88.38	7.19	83.78	Some corrugated culvert.
Sta 15	Br DR.		8.05	82.92	
T.P.	4.27	88.40 88.41	6.83	84.14	
B.M.#	Br 5R		4.36	84.04	Spike in E of 2 cottonwoods · Sta 16
T.P.	3.60	83.56	8.44	79.96	Br D.R.
	3.27	83.55 83.54	9 8.13	80.27	
T.P.	1.89	79.01	6.43	77.12	Sta 15 Br DR = 82.92 − 1.44 = 81.48 · Elev. Sta. 12+85
	1.59	79.01	6.13	77.42	Adjust Br DR. – Raise original elevations 0.80'
Sta 23+19	Br 3R		6.86	72.15	
Sta 23			7.46	71.55	
T.P.	3.66	76.75	5.92	73.09	
	3.54	76.75	5.80	73.21	
B.M.#			3.66	73.09	Highest point on large rock in field approx. 100' N.E. of Sta 30 on Br 3R.

	B.S.	H.I. 76.75	−S	Elev.
T.P.	3.19	71.44	8.50	68.25
	2.78	71.44	8.09	68.66
T.P.	4.04	67.15	8.33	63.11
	3.83	67.16	8.11	63.33
T.P.	1.58	58.21 58.22	10.52	56.63
	1.21	58.23	10.13	57.02
T.P.	5.31	57.55 57.56	5.98	52.24
	4.91	57.57	5.56	52.66
T.P.	4.03	58.77	2.82	54.74
	3.58	58.77	2.37	55.19
B.M.B.			0.88	57.89

G.O. Checking Br. 24

	B.S.	H.I.	-S	Elev.
B.M. #2	3.63	55.36		51.73
T.P.	6.18	59.16	2.38	57.98
		59.17		
T.P.	5.71	59.18	1.89	53.47
T.P	9.43	63.15	5.45	53.72
"	9.15	63.15	5.17	54.00
T.P.	9.59	71.61	1.13	62.02
	9.95	71.62	1.98	61.67
T.P	6.53	74.82	3.33	68.29
	6.21	74.81	3.02	68.60
	4.04	72.29	6.56	68.25
	3.53	72.28	6.06	68.75
Sta 1 Br 24.			8.64	63.65
Sta 26 Br 24.			9.45	62.74
Sta 29+26 "			7.68	64.61
B.M. #1 Br 24	6.17	72.02	6.44	65.85
T.P.	6.70	72.02	6.97	65.32
			~~6.70~~	

Spike in Cor. Post. S. end of ⊥
250' E. of Sta 29+26 Br 24.

	B.S.	H.I.	-S.	Elev	
		72.02			
T.P.	7.16	75.76	3.42	68.60	
	6.93	75.76	3.19	68.83	
T.P.	7.10	80.39	2.47	73.29	
	6.64	80.37 80.36	2.04	73.72	
Sta 44+31	Br 24		4.85	75.52	
Sta 45+11			4.33	76.04	
BM 2.	Br. 24.		5.25	75.12	Top of white rock in field 200' W. of plank culvert on Hwy Sta 45 Br 24.
T.P.	10.16	87.91	2.62	77.75	
	9.70	87.92 87.93	2.14	78.73	
T.P.	2.55	87.94	2.53	85.39	
	2.22	87.94	2.20	85.72	
T.P.	2.91	~~82.67~~	8.18	79.76	
	2.67	82.66	7.95	79.99	
BM 3	Br 24. 5.45	83.85	4.26	78.40	N.E. cor. Conc. culvert N. & S. Hwy
Sta 9+64	Br. C.R.		6.83	75.83	Sta. 9+75 Br. C.R.4
T.P.	4.85	83.85	3.66	79.00	

	B.S.	H.I. 83.86	-S	Elev.	
T.P.	9.43	90.91	2.37	81.48	
	9.13	90.91	2.07	81.78	
T.P.	2.96	88.47	5.40	85.51	
	2.64	68.48	5.07	85.84	
B.M. #1. Br-B left.			4.37	84.11	N.E. Cor. N. end of Conc. Culvert on
Sta 21+2	Br.B.L		6.88	81.60	E.&W. Hwy. Sta 21+25 Br.B.L

Checking Br 8 Left.

	BS	H.I	-S	Elev.	
B.M. E	8.85	79.22		70.37	
T.P	7.67	81.82	5.07	74.15	
	7.15	81.82	4.55	74.67	
Sta 10+26			6.05	75.77	
B.M. #1 Br 8 L			4.88	76.94	N.E. Cor. of E. wall of concrete culvert
Sta 15	5.96	~~84.17~~	3.63	78.19	approx 100' N. of Sta 10+50 Br 8 L
T.P	5.77	84.16	3.43	78.39	
Sta. 19+46			3.30	80.86	
T.P	7.57	~~89.39~~	2.39	81.82	
	7.27	89.40	2.03	82.13	
	6.92	91.91	4.41	84.99	
	6.60	91.90	4.10	85.30	
Sta 15+44 Br Q L.			7.07	84.83	
Sta 16 " " "			6.77	85.13	
B.M. #2 Br 8 L			6.64	85.26	Top of N. point of concrete base of steel corner post approx 50' W. of Sta 16 Br Q L.
T.P.	7.57	95.63	3.84	88.06	
	7.24	95.63	3.51	88.39	

	B.S.	H.I.	- S.	Elev.	
		95.63			
T.P.	3.36	92.99	6.00	89.63	
		93.00			
	3.16	93.02	5.78	89.85	
~~B.M.~~ 13+50	Br J 4		5.68	87.32	
B.M.#1	Br 34		4.10	88.90	Spike in root of N.E. side of large cottonwood Br. J.4,
T.P.	3.05	90.12	5.93	87.07	10 S.W. corner of grove. — Approx Sta 14+25
	2.83	90.12	5.71	87.29	
T.P.	3.03	85.27	7.88	82.24	
	2.68	85.27	7.53	82.59	
T.P.	4.02	82.32	6.97	78.30	
	3.71	82.32	6.66	78.61	
B.M.#2	Br 34		4.65	77.67	N.E. Cor. of N. wall of concrete culvert.
℄ Hwy Sta 54+56	Br 34		4.86	77.46	Sta 54+50 Br 3 Left.
	11.50	91.12	2.70	79.62	
		91.11			
	10.95	91.10	2.17	80.15	
B.M.#			3.32	87.79	Spike at bottom of Corner post S.W. Cor.
Sta 22+33	Br G 4		5.78	85.33	Sec. 24

	B.S.	H.I. 91.11	-S	Elev
	2.31	~~87.50~~	5.92	85.19
	1.76	87.49	5.38	85.73
Sta 10+82 Br. G.L.			11.20	76.29 (76 55, 26)
B.M.#	6.06	94.96		88.90
T.P.	2.20	95.87	1.34	93.67
	1.87	95.87	0.96	94.00
T.P.	2.56	~~93.14~~ 93.13	5.24	90.58
	2.15	~~93.12~~	4.85	90.97
Sta 29+57 Br. G.L.			7.25	85.88

Br G Left checks at Sta 10+82.

Old elevations approx 1.00 low at Sta 22+33

Same spike in Cottonwood

Br. G Left OK

	B.S.	H.I.	-S	Elev.	
BM.#	8.98	94.24		85.26	
	6.03	95.92	4.35	89.89	
	5.72	95.92	4.04	90.20	
Sta 32+66 Br. 8 L			6.78	89.14	
T.P.	11.51	106.01	1.92 ?	94.50	
	11.14	106.00	1.06	94.86	
T.P.	4.03	106.92	3.11	102.89	
	3.57	106.92	2.65	103.35	
T.P.	[illegible]	[illegible]	7.12	99.80	
	[illegible]	[illegible]	6.67	100.25	
~~Sta. Br. L.~~					
	8.23	108.03			
		108.04			
	7.80	108.05			
					old elev
Sta 13+23 Br. O.L			3.21	104.83	102.83
T.P.			2.48	105.56	
			2.25	105.79	

100.25
7.80
108.05

99.80
8.23
108.03

99.25
7.80
107.05

8.23
7.80
7.12
6.67
45

Same corner post footing.

Not Sta. 13+23 as shown on plat.

Is corner at end of Br. O.L.

	B.S.	H.I. 108.04	−S	Elev.	
T.P.	3.79	~~101.66~~	10.17	97.87	
	3.27	101.67	9.64	98.40	
Sta 36+91 Br 9.4			3.97	97.70	Br. 9.4. c beeks.
Same T.P Br. 0.4	4.06	109.62		105.56	
	3.82			105.79	
T.P.	3.61	~~105.49~~	7.74	101.88	
	3.44	105.48	7.56	102.04	
Sta 11 Br. 0.4.			5.22	100.26	
			3.33	102.15	At ℄. should be end of Br. 0.4.
			7.02	98.46	Br 0.4 OK
Br. 9.4. Sta 36+91	7.32	105.02		97.70	Br 9.4 OK.
T.P.	3.66	~~107.09~~ 107.12	1.59	103.43	
	3.36	~~107.15~~	1.23	103.79	
	4.73	101.42	10.43	96.69	
	4.93	101.43	10.12	97.00	

	B.S.	H.I. 101.93	-S.	Elev	
T.P.	3.02	94.69	9.76	91.67	
	2.59	94.70	9.32	92.11	
			6.88	87.82	old Elev
			8.06	86.74	87.29

Ground level at end of Br 114

In ditch at end of Br. 114

Br 114 OK.

Relocating Br 5.R.

Sta	B.S.	H.I.	-S	Elev.
B.M.#3	4.72	62.32	12.32	57.60
0=sta 54 Main				
L 2= " 56 "			7.25	55.07
3.			7.60	54.72
4			7.70	54.62
5.			6.60	55.72
6			5.25	57.07
7.			4.40	57.92
8.			~~3.50~~	~~58.82~~
9.			~~4.00~~	~~58.32~~
T.P.	4.94	63.49	~~3.77~~	~~58.55~~
" " "	4.68	63.48 63.47	~~3.53~~	~~58.79~~
10 Pond			~~6.30~~	~~57.18~~
L 10			~~5.50~~	~~57.98~~
12			~~5.30~~	~~58.18~~
13			~~5.50~~	~~57.98~~
14			~~5.65~~	~~57.83~~

Approximate location of Angle points.

L. sta 1 = sta 56 original Main.

L " 6 = 130' N & 95' W. of SE. Meadow Fence Corner.

Fence corner = 470' S. of S. Hwy. F. & 300' W. of Center of Bridge sta 55 Main

L. sta 18 = 80' N. & 1040' W. of same F. Cor.

L. sta 14+50 = 855' N & 220' S of " F. Cor.

Note Use Sta Number & Elev on this page including sta. 7

		63.48		
15			~~5.10~~	~~58.38~~
L. 15+50			~~5.60~~	~~57.88~~
16			~~5.75~~	~~57.73~~
17			~~5.00~~	~~58.48~~
18			~~4.70~~	~~58.78~~
L 16+50 +50			4.35	59.13
15+50			3.84	59.64
14+50			3.65	59.83
13+50			3.70	59.78
12+50			4.40	59.08
11+50			5.30	58.28
10+50			4.80	58.68
9+50			4.90	58.58
8+50			5.00	58.48
=sta 6			5.45	58.03
T.P.	9.61	68.78	4.31	59.17
	9.45	68.78	4.13	59.35

26.25
18
8.25

60
9.50
8.25
23.75

Note. Use cuts on this page including sta 8+50 & 16+50

		68.78			
17+50			9.25	59.53	
18+50			9.00	59.78	
19+50			8.95	59.83	
20+50			8.75	60.03	
21+50			8.70	60.58	
S. Hwy. F. 22+36	N. Hwy F. 23+22		—		
22+50			—		
℄ Hwy 22+79			7.55	61.23	
23+50	N of Hwy		8.40	60.38	
24+50			8.35	60.43	
24+75 = 9+80 orig. line			8.35	60.43	
BM. 1	3.5R.		5.57	63.21	63.13

Use these sta numbers & Elevs.

Relocating Br 34

Sta	B.S.	H.I.	- S	Elev
B.M. 3	4.90	62.50		57.60
O = Sta 54+81 orig Main.				
1			7.00	55.50
2			6.40	56.10
3			5.30	57.20
4			4.85	57.65
5			4.10	58.40
6			4.20	.30
7			4.55	
8			5.30	
ditch 8+50			7.30	
9			4.95	
9+12 =			4.40	

Outlet = Sta 54+81 original main

Relocating Pr 34

Sta	B.S.	H.I.	-S	Elev
BM 3	4.90	62.50		57.60
0 = Sta 58 orig Main			8.15	
1			8.00	
2			8.70	
3			6.10	
4			6.45	
5			5.50	
6			5.00	
7			4.50	
7+75			4.40	

Outlet = Sta 58 original main.

Relocating Br 5R

Sta	BS	Hi.	-S	Elev
BM#3	4.90	62.50		57.60
0				
1			7.20	
2			6.00	
T 3			4.83	
3+50=5/16-1st			4.47	

Dist #9

Change to Open ditch

0 To sta. 37+35

BM #1	1.65	51.65		50.00
H²O			11.2	40.4
1			9.8	41.85
2			9.3	42.35
3			9.0	42.65
L 3+45				
4			7.5	44.15
5			7.2	44.45
BM	2.43	52.43		50.00
℄ bridge			2.9	49.53
6			12.0	40.43
7			9.9	42.53
8			7.5	44.93
9			7.4	45.03

sta 0 = ℄ Bridge N+S Hwy.

100' W. outlet bridge on N+S Hwy.

N. Fence line 5+86

S. F.L. 6+45

B-1-R 7+48

L. 9+22		52.43			
10			7.5	44.93	
11			7.5	44.93	
12			6.3	46.13	
13			5.6	46.83	
14			5.3	47.13	
T.P.	5.01	52.35	5.09	47.34	
	4.17	52.33	4.27	48.16	
15		52.34	6.1	46.24	
16			5.0	47.34	
17			5.8	46.54	
18			5.2	47.14	18+10 BR. SE.
19			4.7	47.64	18+10 Flood water inlet
20			3.2	49.14	
L. 20+15					L. West.
21			3.6	48.74	
22			2.9	49.44	
23			2.3	50.04	23+00 E.LE N+S. Hwy

L. SW.

23+07		52.24	3.1	49.24		E. ditch
23+27			1.60	50.74		℄ HWY
23+49			5.3	47.04		W. ditch
24			2.8	49.54		23+56 W. P.L.
T.P.	4.96	55.70	1.60	50.74		
	4.48	55.70	1.12	51.22		
BM #2			2.95	51.75	51.73	24+85 E+W P.L.
25			7.5	48.20		
26			7.4	48.30		
27			7.0	48.70		
28			7.3	48.40		
29			6.6	49.10		
30			7.0	48.70		
31			6.3	49.40		
32			5.9	49.80		
33			5.7	50.00		
34			5.6	50.10		
34+31 L.						34+31 L. SW.

35		55.70	6.1	49.60
36			5.9	49.80
37			6.5	49.20
37+35			6.4	49.30

35+00 = BR. 2 - R.

= 30 OF Original Main

#9

Outlet Change

Figure to use Bail Hwy. bridges.

#1 Bridge on N.+S. Hwy at new outlet is 427' N. of SE. Cor NE of NW Sec. 13.

#2 Bridge on E+W Hwy is 317' W. of above Cor.

π At Bridge #2

Bridge - P.I. #2	353°-40'	315'	P.I. #2
" - P.I. #1	173°-40'	280'	P.I. #1

π At P.I. #1

Def. ∆ Bridge #1 - Bridge #2
61°-30'

May-26-20
Briggs
Hoff
Wahlen

Bridge Notes -

Bridge #1

26' x 5½' to H²O

26' x 7½' to bottom ditch

Footings approx 6' below W.L.

Bridge #2

17½' x 7' waterway (1' water)

Footings 3' below W.L

Alignment Main Cont.

Azim from Bridge #2 To
P.I. #2 353°-40'

⊼ At P.I. #2 = Sta. 9+22

B.S. 353°-40' #1

32°-18' To P.I. #3

Def'l Δ 37°-38' R
Def'l ∠ used May 19-21 37°-40' R

⊼ At P.I. #3 = Sta. 20+15

B.S. 32°-18' #2.

58°-40' To P.I. #4

Def'l ∠ 26°-20' R

⊼ At P.I. #4

B.S. 58°-40' #3

31°-52' To Sta 37+3

Def'l ∠ 53°-9' L

Sta

New Def May 19 1921 Sta 16+30
Δ = 34°-34' R.

6/11/20

Johnson Levels
Outlet #2
CREEK to R.R.

W.L.	10.77	60.77		50.00	46.00	CREEK
G.L.			4.4	56.4	52.4	CREEK
T.P.	4.29	61.28	3.78	56.99	52.99	G.L
G.L			4.8	56.5	52.5	N. Side R.R.
Bottom Cattle Pass			6.2	55.1	51.1	
⊙ S. Side RR.			6.7	54.6	50.6	

O.K. Rept. to board
6/14/20

Carl
Bedford
Hudson

4.6
.3
1.6

160.

37+35 = 30 old
nom.

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.