

DR[#]11 Blackhawk Co.
No. 6

Construction.



ENGINEERS'
LEVEL BOOK

No. 412

1097

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

Roadway 16 feet wide.

Side Slopes 1 on 1.

For Single Track Embankment.

H	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	H
0	8.0	8.1	8.2	8.3	8.4	8.5	8.6	8.7	8.8	8.9	0
1	9.0	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	1
2	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9	2
3	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7	11.8	11.9	3
4	12.0	12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	12.9	4
5	13.0	13.1	13.2	13.3	13.4	13.5	13.6	13.7	13.8	13.9	5
6	14.0	14.1	14.2	14.3	14.4	14.5	14.6	14.7	14.8	14.9	6
7	15.0	15.1	15.2	15.3	15.4	15.5	15.6	15.7	15.8	15.9	7
8	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8	16.9	8
9	17.0	17.1	17.2	17.3	17.4	17.5	17.6	17.7	17.8	17.9	9
10	18.0	18.1	18.2	18.3	18.4	18.5	18.6	18.7	18.8	18.9	10
11	19.0	19.1	19.2	19.3	19.4	19.5	19.6	19.7	19.8	19.9	11
12	20.0	20.1	20.2	20.3	20.4	20.5	20.6	20.7	20.8	20.9	12
13	21.0	21.1	21.2	21.3	21.4	21.5	21.6	21.7	21.8	21.9	13
14	22.0	22.1	22.2	22.3	22.4	22.5	22.6	22.7	22.8	22.9	14
15	23.0	23.1	23.2	23.3	23.4	23.5	23.6	23.7	23.8	23.9	15
16	24.0	24.1	24.2	24.3	24.4	24.5	24.6	24.7	24.8	24.9	16
17	25.0	25.1	25.2	25.3	25.4	25.5	25.6	25.7	25.8	25.9	17
18	26.0	26.1	26.2	26.3	26.4	26.5	26.6	26.7	26.8	26.9	18
19	27.0	27.1	27.2	27.3	27.4	27.5	27.6	27.7	27.8	27.9	19
20	28.0	28.1	28.2	28.3	28.4	28.5	28.6	28.7	28.8	28.9	20
21	29.0	29.1	29.2	29.3	29.4	29.5	29.6	29.7	29.8	29.9	21
22	30.0	30.1	30.2	30.3	30.4	30.5	30.6	30.7	30.8	30.9	22
23	31.0	31.1	31.2	31.3	31.4	31.5	31.6	31.7	31.8	31.9	23
24	32.0	32.1	32.2	32.3	32.4	32.5	32.6	32.7	32.8	32.9	24
25	33.0	33.1	33.2	33.3	33.4	33.5	33.6	33.7	33.8	33.9	25
26	34.0	34.1	34.2	34.3	34.4	34.5	34.6	34.7	34.8	34.9	26
27	35.0	35.1	35.2	35.3	35.4	35.5	35.6	35.7	35.8	35.9	27
28	36.0	36.1	36.2	36.3	36.4	36.5	36.6	36.7	36.8	36.9	28
29	37.0	37.1	37.2	37.3	37.4	37.5	37.6	37.7	37.8	37.9	29
30	38.0	38.1	38.2	38.3	38.4	38.5	38.6	38.7	38.8	38.9	30
31	39.0	39.1	39.2	39.3	39.4	39.5	39.6	39.7	39.8	39.9	31
32	40.0	40.1	40.2	40.3	40.4	40.5	40.6	40.7	40.8	40.9	32
33	41.0	41.1	41.2	41.3	41.4	41.5	41.6	41.7	41.8	41.9	33
34	42.0	42.1	42.2	42.3	42.4	42.5	42.6	42.7	42.8	42.9	34
35	43.0	43.1	43.2	43.3	43.4	43.5	43.6	43.7	43.8	43.9	35
36	44.0	44.1	44.2	44.3	44.4	44.5	44.6	44.7	44.8	44.9	36
37	45.0	45.1	45.2	45.3	45.4	45.5	45.6	45.7	45.8	45.9	37
38	46.0	46.1	46.2	46.3	46.4	46.5	46.6	46.7	46.8	46.9	38
39	47.0	47.1	47.2	47.3	47.4	47.5	47.6	47.7	47.8	47.9	39
40	48.0	48.1	48.2	48.3	48.4	48.5	48.6	48.7	48.8	48.9	40

Example—If point is 22.6 ft. above grade, how far should it be from center line to be a slope stake point? Ans. from Table 30.6. For same slopes but other widths of roadbed, correct above figures by one-half difference in width of roadbed; thus in example above, for 20 ft. roadbed distance will be $30.6 + (20 - 16) \div 2$ or 2 ft. added to 30.6 = 32.6. For slopes of 1 on 1½ see inside of back cover.

Copyright, 1914, by Eugene Dietzgen Co.

R. P. BRIGGS,
CIVIL ENGINEER
WATERLOO, IOWA

J. W. Fisher
COUNTY AUDITOR

AUG - 8 '21

FILED

Index

BR 2.560-28+21 PP 146

BR 2-A PP 148

Page to Page

	Bench Marks	150
Flies Guts	BR 9	6-10
	BR 9-A	12-14
	BR 9-A-1	14
	BR 9-B	16
	BR 10	18-24
	BR 11	26-28
	BR 12	30
	BR 13	32-34
	BR 14	36-38
	BR 15	40 52
	BR 15-A	54 56
	BR 15-B	57
	BR 15-C	58-60
	BR 15-C-1	60
	BR 15-C-2	60
	BR 15-D	62 64
	BR 15-E	64

Elevst Cots		Page to page
BR	16	66
BR	17	66
BR	18	68-70
BR	18-A	72
BR	18-A-1	72.
BR	19	74
BR	20	76 80
BR	20-A	80
BR	21	82
BR	21-A	82
BR	22	84 86
BR	22-A	88
BR	22-B	90
BR	23	92 94
BR	23-A	96
BR	24	96

Elevst Cots		Page to page
BR	25	98-102
BR	25-A	102
BR	25-B	104
BR	26	104 106
BR	27	108 110
BR	27-A	112
BR	27-B	114
BR	28	116
BR	29	118-120
BR	30	122
BR	31	124 126
BR	31-A	126
BR	X	128 130
BR	Y	132 134

Sta	Elev	Gr	Gut	% Gr	Av. Size	Max Min
0	20.18	15.00	5.18	.70	12"	
1	20.93	15.70	5.23			
2	21.50	16.40	5.10			
3	21.73	17.10	4.63			
4	22.43	17.80	4.63			
5	23.23	18.50	4.73			
6	23.71	19.20	4.51			
7	24.32	19.90	4.42			
8	24.82	20.60	4.22			
9	25.97	21.30	4.67			
10	26.87	22.00	4.87			
11	27.07	22.70	4.37			
12	28.14	23.40	4.74			
13	28.70	24.10	4.60			
+33	29.15					
14	29.05	24.80	4.25			
15	29.60	25.50	4.10			

$\frac{12''}{10''} \times 4.70$

= Sta 105 Main

= Sta 0 BR 9-A

FW & SW $\frac{1}{4}$ Sec 17

Sta	Elev	Gr	Cut	% Gr Size	Av Max. Mid
16	30.45	26.20	4.25	70	
17	31.15	26.90	4.25		
18	32.16	27.60	4.56		
19	32.95	28.30	4.65	$\frac{10''}{8''} \times$	440
20	34.20	29.00	5.20		
21	35.35	29.70	5.65		
22	36.05	30.40	5.65		
23	36.60	31.10	5.50		
24	37.32	31.80	5.52		
25	37.96	32.50	5.46	$\times$ —	
26	37.71	33.70	4.01	$\frac{8''}{6''} \times$	5.20
27	39.51	34.90	4.61		
28	40.31	36.10	4.21		
29	41.50	37.30	4.20		
30	42.71	38.50	4.21		
31	44.27	39.70	4.57		
+73	45.27				

= Sta 0 BIR 9-B

31496 4427

1

N. Hwy #

Sta	Elev	Gr	Cut	Size	Av Max Min
-----	------	----	-----	------	------------------

31+96	44.27			1.20	6"
-------	-------	--	--	------	----

32	45.02	40.90	4.12		
----	-------	-------	------	--	--

+12	46.42				
-----	-------	--	--	--	--

+30	44.82				
-----	-------	--	--	--	--

+40	46.07	41.38	4.69		
-----	-------	-------	------	--	--

0	46.72			4.30	
---	-------	--	--	------	--

N. Hwy D.

E Hwy S Line Sec 17

S Hwy D.

End - S. Hwy E

Bottom pond 300' SW of

End BR 9.

Sta	Elev	Gr	Gut	Size	AV Max. Min
-----	------	----	-----	------	-------------

0	26.87	22.10	4	77.40	
---	-------	-------	---	-------	--

+99	26.81				
-----	-------	--	--	--	--

1	26.56	22.50	4	06	
---	-------	-------	---	----	--

2	26.96	22.90	4	06	$\times \frac{10''}{80} \times 430$
---	-------	-------	---	----	-------------------------------------

3	27.86	23.70	4	16	
---	-------	-------	---	----	--

4	28.76	24.50	4	26	
---	-------	-------	---	----	--

5	29.60	25.30	4	30	
---	-------	-------	---	----	--

6	30.74	26.10	4	64	
---	-------	-------	---	----	--

7	31.59	26.90	4	69	
---	-------	-------	---	----	--

8	32.39	27.70	4	69	
---	-------	-------	---	----	--

9	32.99	28.50	4	49	
---	-------	-------	---	----	--

4 10	33.80	29.30	4	50	
------	-------	-------	---	----	--

11	34.72	30.10	4	62	
----	-------	-------	---	----	--

12	36.07	30.90	5	17	
----	-------	-------	---	----	--

13	36.92	31.70	5	22	
----	-------	-------	---	----	--

14	37.47	32.50	4	97	
----	-------	-------	---	----	--

= Sta 10 BR 9 $175'$ W of NE corner

= N Line SW $\frac{1}{4}$ SE $\frac{1}{4}$ Sec 17

= Sta 0 BR 9-A-1

Sta Elev Gr Cut %Gr Av. Max. Min

1406 37.67 80 8"
 +23 37.52
 +40 39.17
 +55 37.57
 +69 38.07 33.05 5.02 460

BR 9-A.1

0 33.81 29.40 4.41 90 6"
 1 35.67 30.30 5.37
 2 35.52 31.20 4.32
 3 36.32 32.10 4.22
 4 37.07 33.00 4.07
 +09 37.57 33.08 4.49 450

N Hwy A

N. Hwy D.

E Hwy 5 Line sec 17

S Hwy D.

S Hwy A - End

325' W N+SE SE 1/4 sec 17

= Sta 10 BR 9-A.

End - N+SE SE 1/4 sec 17

150' Not N Hwy A.

16

BR 9-B

17

Sta Elev Gr Cor. Size Av Max Min

0 32.16 27.80 4.36 1.00 6"

1 33.25 28.80 4.45

2 34.35 29.80 4.55 $\times \frac{1.60}{1.60}$

3 35.65 31.40 4.25

4 37.60 33.00 4.60

5 39.20 34.60 4.60

+85 41.30 35.96 5.34 460

= Sta 18 BR 9

End - S.E. Cor NE $\frac{1}{4}$ SW $\frac{1}{4}$ Sec 17

BR 10.

19

Sta	Elev	Gr	Gut	% Gr	Size	Av Max Min
0	27.13	22.00	5.13	36	12"	
1	26.16	22.36	3.80			
+10	24.86					
2	27.41	22.72	4.69			
L + 76	27.91					
3	27.86	23.08	4.78			
4	28.21	23.44	4.77			
5	28.76	23.80	4.96			
6	29.16	24.16	5.00			
7	29.47	24.52	4.95			
8	29.97	24.88	5.09			
9	29.97	25.24	4.73			
L + 50	29.72					
10	30.17	25.60	4.57	$\times \frac{12"}{.80}$	$\frac{12"}{10"} \times 5.00$	
+87	31.67					
//	31.70	26.40	5.30			
L + 50	31.77					

= Sta 162 main

Ditch King

N45 E

In Ditch

N45 E Sec 8

250

Sta	Elev	Gr	Cut	% Gr Size	Av. Max Min
-----	------	----	-----	--------------	-------------------

12 32.27 27.20 5.07

13 33.27 28.00 5.27

14 33.87 28.80 5.07

15 34.42 29.60 4.82 $\times \frac{.50}{.50}$

16 34.67 30.10 4.57

17 35.27 30.60 4.67

L 18 35.97 31.10 4.87

19 36.27 31.60 4.67

20 37.07 32.10 4.97

21 37.37 32.60 4.77

22 37.92 33.10 4.82

23 38.62 33.60 5.02

24 38.92 34.10 4.82

25 39.87 34.60 5.27

26 40.19 35.10 5.09

27 40.89 35.60 5.29

L 466 42.14

N 45° E 5E 1/4 Sec 8

22

23

Sta Elev Gr Cut %G Size Av. Max. Min.

28 41.89 36.10 5.79 $\frac{10''}{8''} \times 5.00$

29 42.34 36.60 5.74

30 42.34 37.10 5.24

31 42.59 37.60 4.99

32 42.64 38.10 4.54

33 43.14 38.60 4.54

34 43.64 39.10 4.54

35 44.89 39.60 5.29

36 45.49 40.10 5.39

37 45.57 40.60 4.94

L+50 46.04

38 46.62 41.10 5.52 $\frac{5.50}{1.00} \times \frac{5''}{6''} 5.10$

39 47.67 42.10 5.57

40 47.57 43.10 4.47

41 49.27 44.10 5.17

42 50.17 45.10 5.07

43 51.42 46.10 5.32

24
 Sta Elev Gr Cut %Gr Av. Max Min
 Size

44 52.02 47.10 4.92 1.00 6"

+15 52.47

+28 51.77

+45 57.02

+60 52.12

+75 53.07 47.85 5.22 S.W

W Hwy #

W Hwy D.

E Hwy E Line Sec 8

E Hwy D

E Hwy # - End

26

BR 11

27

Sta	Elev	Gr	Cut	Size	Av Max Min
-----	------	----	-----	------	------------

0	28.45	23.00	5.45	74	8"
---	-------	-------	------	----	----

1	28.83	23.74	5.09		
---	-------	-------	------	--	--

+75	29.63				
-----	-------	--	--	--	--

2	30.13	24.48	5.65		
---	-------	-------	------	--	--

3	30.43	25.22	5.21		
---	-------	-------	------	--	--

4	30.73	25.96	4.77		
---	-------	-------	------	--	--

5	31.23	26.70	4.53		
---	-------	-------	------	--	--

6	31.73	27.44	4.29		
---	-------	-------	------	--	--

7	32.43	28.18	4.25		
---	-------	-------	------	--	--

8	33.13	28.92	4.21		
---	-------	-------	------	--	--

9	33.73	29.66	4.07		
---	-------	-------	------	--	--

10	34.83	30.40	4.43		
----	-------	-------	------	--	--

$$\frac{8''}{6''} \times 49$$

11	36.03	31.14	4.89		
----	-------	-------	------	--	--

L 750	36.73				
-------	-------	--	--	--	--

12	37.03	31.88	5.15		
----	-------	-------	------	--	--

13	37.38	32.62	4.76		
----	-------	-------	------	--	--

L 14	38.03	33.36	4.57		
------	-------	-------	------	--	--

= Sta 170 main

N + S A

28

29

Sta	Elev	Gr	Cut	Size	70 Gr	Av Max	Min
-----	------	----	-----	------	-------	--------	-----

15	38.58	34.10	4.48	74	6"		
----	-------	-------	------	----	----	--	--

16	39.58	35.00	4.58	90			
----	-------	-------	------	----	--	--	--

17	40.48	35.90	4.58				
----	-------	-------	------	--	--	--	--

18	41.48	36.80	4.68				
----	-------	-------	------	--	--	--	--

+16	42.08						
-----	-------	--	--	--	--	--	--

+30	41.28						
-----	-------	--	--	--	--	--	--

+50	43.33						
-----	-------	--	--	--	--	--	--

L +62	42.18						
-------	-------	--	--	--	--	--	--

19	42.13	37.70	4.43				
----	-------	-------	------	--	--	--	--

20	42.83	38.60	4.23				
----	-------	-------	------	--	--	--	--

21	44.13	39.50	4.63				
----	-------	-------	------	--	--	--	--

L +50	44.43						
-------	-------	--	--	--	--	--	--

+90	45.53	40.31	5.22				
-----	-------	-------	------	--	--	--	--

4.7

Note - Use #2 S.P. Sta 18 to end.

E Hwy 1E

E. Hwy D

E Hwy

Note - Hwy D ave to below
elevations taken

End - End E+W E Sec 7

30

BR-12

31

Sta Elev Gr Cut Size Av Max Min

0 29.73 24.00 5.73 .60 6"

+60 27.73 22.00 5.73 .60

1 27.93 24.60 3.33

2 29.78 25.20 4.58

3 30.48 25.80 4.68

4 31.08 26.40 4.68

5 31.38 27.00 4.38

6 32.37 27.80 4.57

L +50

7 33.31 28.60 4.71

8 34.11 29.40 4.71

9 34.41 30.20 4.21

10 35.26 31.00 4.26

+80 36.66 31.64 5.02

+60

= Sta 178+10 Main

Ditch Xing

End - Center Sec 8

32

BR 13

33

Sta Elev Gr Cut Size ^{%Gr} ^{Av} ^{MAX} ^{Min}

0 29.57 24.50 5.07 70 8"

= Sta 184 Main

1 30.25 25.20 5.05

2 30.80 25.90 4.90

3 32.10 26.60 5.50

4 32.60 27.30 5.30

5 32.85 28.00 4.85

L 6 +50 33.17 28.70 4.47

7 33.77 29.40 4.37

8 34.42 30.10 4.32

9 35.07 30.80 4.27

L 10 36.07 31.50 4.57 $\times \frac{8''}{100} \times 4.8$
now 6"

11 37.07 32.50 4.57

12 37.74 33.50 4.24

13 38.71 34.50 4.21

14 39.61 35.50 4.11

15 40.51 36.50 4.01

16 41.41 37.50 3.91

Sta	Elev	Gr	Cut	% Gr Size	Av. Max Min
17	42.66	38.50	4.16	1.00	
+44	43.46				
+58	42.43				
+80	44.41				
+96	42.96				
18	43.11	39.50	3.61		
+05	43.55	39.55	4.00		

E Hwy A

E Hwy D

E Hwy W Line Sec 17

W Hwy D

End W Hwy F

36

BR 14

31

Sta Elev Gr Cut ^{%Gr} size ^{Av} ^{Max} ^{Min}

0 30.11 25.00 5.11 4 12"

1 30.47 25.40 5.07

+60 28.42

2 30.42 25.80 4.62

L +50

3 30.87 26.20 4.67

4 31.62 26.60 5.02

5 32.02 27.00 5.02 $\frac{12'}{10''} \times 490$

6 32.39 27.40 4.99

7 32.57 27.80 4.77

8 32.62 28.20 4.42

9 33.02 28.60 4.42

10 33.42 29.00 4.42 $\times \frac{10'}{8''}$

11 34.37 29.90 4.47 $\times 460$

+07 35.10

+50 35.37

12 35.82 30.80 5.02 $\frac{8'}{6''} \times 480$

= Sta 186 Main

Ditch x 129

N45 E sec 8

approx 1000' N Sec Cen.

Sta	Elev	Gr	Out	%Gr Size	Av Max Mins
-----	------	----	-----	-------------	-------------------

13	36.37	31.70	4.67	9	
----	-------	-------	------	---	--

14	36.47	32.60	3.87		
----	-------	-------	------	--	--

15	37.97	33.50	4.47		
----	-------	-------	------	--	--

+61	39.12	34.05	5.07		
-----	-------	-------	------	--	--

460

End - 75' E. of SW cor. NW ^{Sec 8} 4 NE ¹/₄

Sta Elev Gr Cut %Gr Ar Max
Size Min

0	31.52	25.00	6.52	25 ³ 22"
1	31.34	25.25	6.09	
2	31.29	25.52	5.79	
3	32.19	25.75	6.44	
4	32.19	26.00	6.19	
4 5	33.14	26.25	6.89	
6	32.57	26.50	6.07	
7	32.53	26.75	5.78	
8	33.05	27.00	6.05	
9	32.88	27.25	5.63	
10	33.33	27.50	5.83	
11	33.48	27.75	5.73	
12	33.70	28.00	5.70	
+48	32.57			
13	33.72	28.25	5.47	
+77	34.12			
+84	32.97			

= Sta 191 + 50 Main

Xes tile line here

Ditch Xing

yes tile line here

5 Hwy it

5 Hwy D

Stn Elev Gr Cut Size $\frac{\%Gr}{Av.}$ $\frac{Max}{Min}$

14 35.42 28.50 6.92 25

+15 36.72

+40 33.02

L +51 34.17

15 34.12 28.75 5.37

16 34.08 29.00 5.08

17 34.33 29.25 5.08

18 34.67 29.50 5.17

19 34.87 29.75 5.12

+50 32.89

20 34.99 30.00 4.99 $\frac{22}{20} \times 5.80$

L 21 35.29 30.25 5.04

22 35.89 30.50 5.39

23 35.99 30.75 5.24

L 24 36.15 31.00 5.15

25 36.84 31.25 5.59

26 36.99 31.50 5.44

≠ Hwy.

N Hwy D.

N. Hwy E

= Sta 0 BR 15-A.

Ditch Xing.

Sta Elev Gr Cut Size Min
 90.6r Av May

27 37.14 31.75 5.39.25

L 28 37.49 32.00 5.49

29 37.69 32.25 5.44

30 38.14 32.50 5.64 $\frac{20''}{18''} \times 5.30$

31 38.31 32.75 5.56

L 32 38.46 33.00 5.46

33 38.61 33.25 5.36

34 38.96 33.50 5.46

35 38.91 33.75 5.16

36 39.44 34.00 5.44

37 39.62 34.25 5.37

788 40.37

38 38.87 34.50 4.37

+25 41.57

+50 39.72

L +75 40.57

39 34.75

$\frac{18''}{16''} \times 5.40$

= Sta 0 BIP 15-B

E Hwy #

E Hwy D

E Hwy

W Hwy D = Sta 0 BIP 15-C

W Hwy #

46

47

Sta	Elev	Gr	Cut	% Gr Size	Av. Max Min
-----	------	----	-----	--------------	----------------

40	40.47	35.00	5.47	25	16"
----	-------	-------	------	----	-----

41	40.36	35.25	5.11		
----	-------	-------	------	--	--

42	40.90	35.50	5.40		
----	-------	-------	------	--	--

43	41.19	35.75	5.44		
----	-------	-------	------	--	--

44	41.24	36.00	5.24		
----	-------	-------	------	--	--

45	41.69	36.25	5.44		
----	-------	-------	------	--	--

46	41.94	36.50	5.44		
----	-------	-------	------	--	--

47	42.39	36.75	5.64		
----	-------	-------	------	--	--

47+75

48	42.69	37.00	5.69		
----	-------	-------	------	--	--

49	43.08	37.25	5.83	16"	5.50
----	-------	-------	------	-----	------

14"

50	40.98				
----	-------	--	--	--	--

Pond Sta 47+75

50	43.08	37.50	5.58		
----	-------	-------	------	--	--

x →
.38

51	43.43	37.88	5.55		
----	-------	-------	------	--	--

52	43.98	38.26	5.72		
----	-------	-------	------	--	--

53	44.53	38.64	5.89		
----	-------	-------	------	--	--

54	44.63	39.02	5.61		
----	-------	-------	------	--	--

Sta Elev Gr Cut ⁹⁶⁶ size ^{Av} Max Min

55 45.32 39.40 5.92 38 14"

56 45.14 39.78 5.36

57 45.59 40.16 5.43

58 46.29 40.57 5.75

+82 46.44 <

59 46.19 40.92 5.27

60 46.29 41.30 4.99

61 46.62 41.68 4.94

62 46.95 42.06 4.89

+72 47.70

63 47.46 42.44 4.96

L + 50

64 47.85 42.82 5.03

65 48.15 43.20 4.95 $\frac{14''}{12''} \times 5.40$

66 48.58 43.58 5.00

67 48.84 43.96 4.88

68 49.19 44.34 4.85

200' E SW cor NE NE 1/4

E-W 1/4 NE 1/4 Sec 6

300' N of SW cor NE NE 1/4

N 1/2 NE 1/4 Sec 6

= Sta 0 B/P 15-12

Sta Elev Gr Cut ^{7.66} Size ^{Av Max} Min

69 49.64 44.72 4.92 38

70 50.04 48.10 4.94

71 50.49 45.48 5.01

+60 50.31

+70 49.19

+88 52.49

72 51.76 48.86 5.90

+08 49.28

+15 50.98

73 50.78 46.24 4.54

$\frac{12'}{10''} \times 5.00$

74 51.43 46.62 4.81

L 75 51.88 47.00 4.88

76 52.33 47.38 4.95

77 52.73 47.76 4.97

78 53.19 48.14 5.05

79 53.51 48.52 4.99

80 53.76 48.90 4.86

$\frac{10''}{5.11} \times 4.90$

L +50 54.11

S. Hwy E

S. Hwy D

E Hwy

N. Hwy D

N. Hwy E

= Sta 0 BR 15-E.

519 Elev Gr Cut. $\frac{1}{2}$ Gr Size Av. Max. Min

81 54.36 49.28 5.08 .38

82 54.86 49.66 5.20

83 55.21 50.04 5.17

84 55.91 50.42 5.49

85 56.39 50.80 5.59

L 86 56.94 51.80 5.14 $\frac{8''}{6''} \times 5.20$

87 57.44 52.80 4.64

88 58.59 53.80 4.79

89 59.64 57.80 4.84

L 475 60.29

90 60.36 58.80 4.56

91 61.71 56.80 4.91

92 63.26 57.80 5.46

93 64.01 58.80 5.21

94 64.66 59.80 4.86

+30 65.11 60.10 5.01

480

End - N46°E SE $\frac{1}{4}$ Sec 31
Approx 100 Rods Not Hwy.

Sta	Elev	Gr	Cut	Size	AV MAX Min
-----	------	----	-----	------	------------------

0	34.87	30.55	4.32	60	6"
---	-------	-------	------	----	----

+10	33.05				
-----	-------	--	--	--	--

1	35.25	31.15	4.10		
---	-------	-------	------	--	--

2	36.00	31.75	4.25		
---	-------	-------	------	--	--

L 3	36.75	32.35	4.40		
-----	-------	-------	------	--	--

4	37.60	32.95	4.65		
---	-------	-------	------	--	--

5	38.55	33.55	5.00	1.60	
---	-------	-------	------	------	--

6	39.76	34.65	5.11	1.10	
---	-------	-------	------	------	--

7	40.72	35.75	4.97		
---	-------	-------	------	--	--

8	41.57	36.85	4.72		
---	-------	-------	------	--	--

+85	43.12				
-----	-------	--	--	--	--

9	42.47	37.95	4.52		
---	-------	-------	------	--	--

+20	43.82				
-----	-------	--	--	--	--

L +35	43.07				
-------	-------	--	--	--	--

	42.27				
--	-------	--	--	--	--

10	43.32	39.05	4.27		
----	-------	-------	------	--	--

= Sta 19 BR 15

Ditch Xing

E Hwy A

E Hwy D

E Hwy E line Sec 6

In Ditch by 9+35

Sta Elev Gr Cut %Gr Av Max
Size Mils

11 45.12 40.15 4.97 1.10 6"

+20 43.42

+24 44.47 40.41 4.06 460

BR 15.15.

0 37.49 32.70 4.79 .80 6"

1 37.87 33.50 4.37

2 38.57 34.30 4.27

+40 38.97

+55 38.07

+70 40.07

+85 38.57

3 39.37 35.10 4.27 450

± E+W Hwy S Line Sec 6

Hwy D

End NE Cor post sec 7

= Sta 28 BR-15.

E Hwy ±

E Hwy D

± Hwy W Line Sec 5

W. Hwy D

End. W. Hwy ±

Sta	Elev	Gr	Cut	Size	Av. Max. Mid
0	40.55	35.10	5.45	8"	
	39.70				
1	40.90	35.80	5.10		
2	41.85	36.60	5.35		
3	43.45	39.20	6.25		
4	43.00	37.90	5.10		
5	43.35	38.60	4.75		
6	44.00	39.30	4.70	8"	5.10
7	44.40	40.00	4.40	6"	
8	45.35	40.70	4.65		
9	46.35	41.40	4.95		
10	47.30	42.10	5.20		
11	47.65	42.80	4.85	8"	5.30
12	47.36	43.10	4.26		
13	47.43	43.40	4.03		
14	47.33	43.70	3.63		
15	48.33	44.00	4.33		

= Sta 38 + 50

Hwy Ditch by Sta 0

= Sta 0 BR 15-G-1.

Note: W Hwy D Area approx 1.25'

= Sta 0 BR 15-G-2

Sta Elev Gr Cut size ^{76 Gr} ^{AV MAX} Min

16 49.18 44.30 4.88.30 6"

L 17 49.98 44.60 5.38

+ 30 49.53

+ 54 50.73 44.76 5.97 4.7 4.70

BR 15-G-1

0 44.00 39.50 4.50 1.00 6"

+15 44.15

+40 43.25

+60 44.90 40.10 4.80 4.70

BR 15-C-2

0 47.43 43.40 4.03.60 6"

+25 48.03

+60 46.53

+85 47.68 43.90 3.78 4.50

W Hwy D

End- SEC cor NE $\frac{1}{4}$ NE $\frac{1}{4}$ Sec 6

= Sta 6 BR 15-G

⊥ Hwy

E Hwy D

End- E Hwy ~~⊥~~

= Sta 13 BR 15-G

⊥ Hwy

E Hwy D

End- E Hwy ~~⊥~~

Sta	Elev	Gr	Cut	% Gr Size	Av Max Min
-----	------	----	-----	--------------	------------------

0	48.15	43.50	4.65	50	8"
---	-------	-------	------	----	----

1	48.70	44.00	4.70		
---	-------	-------	------	--	--

+09	48.05				
-----	-------	--	--	--	--

2	49.00	44.50	4.50		
---	-------	-------	------	--	--

3	49.45	45.00	4.45		
---	-------	-------	------	--	--

4	50.35	45.50	4.85		
---	-------	-------	------	--	--

5	50.25	46.00	4.25	$\times \frac{8"}{50}$	$\times \frac{6"}{60}$ 4.60
---	-------	-------	------	------------------------	-----------------------------

6	51.86	46.80	5.06		
---	-------	-------	------	--	--

7	52.35	47.60	4.75		
---	-------	-------	------	--	--

8	53.20	48.40	4.80		
---	-------	-------	------	--	--

9	53.90	49.20	4.70		
---	-------	-------	------	--	--

10	54.90	50.00	4.90		
----	-------	-------	------	--	--

+24	55.40				
-----	-------	--	--	--	--

+40	54.00				
-----	-------	--	--	--	--

+55	56.00				
-----	-------	--	--	--	--

+72	55.10				
-----	-------	--	--	--	--

Sta 25					
--------	--	--	--	--	--

= Sta 65 BR-15

N+5 & NE 1/4 sec 6

S. Hwy A

S Hwy D

E Hwy

Hwy D by Sta 10+72

Sta	Elev	Gr	Gut	% Gr size	Av. Max. Min.
-----	------	----	-----	--------------	------------------

11	55.25	50.80	4.45		
----	-------	-------	------	--	--

12	55.86	51.60	4.26		
----	-------	-------	------	--	--

13	56.51	52.40	4.11		
----	-------	-------	------	--	--

14	57.81	53.20	4.61	1.8%	
----	-------	-------	------	------	--

15	59.21	54.20	5.01	100	
----	-------	-------	------	-----	--

16	60.31	55.20	5.11		
----	-------	-------	------	--	--

17	61.31	56.20	5.11		
----	-------	-------	------	--	--

+10	61.86				
-----	-------	--	--	--	--

+30	61.21				
-----	-------	--	--	--	--

+50	60.31				
-----	-------	--	--	--	--

+62	61.81	56.82	4.99		4.70
-----	-------	-------	------	--	------

BR 15-E

0	51.88	47.20	4.66	40	
---	-------	-------	------	----	--

1	52.52	47.90	4.66		
---	-------	-------	------	--	--

2	53.21	48.60	4.61		
---	-------	-------	------	--	--

3	53.66	49.30	4.36		
---	-------	-------	------	--	--

4	54.16	50.00	4.16		
---	-------	-------	------	--	--

58	54.96	50.40	4.52		4.50
----	-------	-------	------	--	------

N. Hwy D approx 1.60'
below elevations

⊥ N+5 Hwy

N Hwy D

End - 30' E SW Cor Sec 32

= Sta 75 BR-15

End - N+5 ⊥ SE 1/4 Sec 31
Approx 350' N of Hwy.

Sta Elev Gr Gut. size ^{906r} Av MAX. MIN

0 33.88 28.00 5.88 50 6"

+50 31.23

1 32.93 28.50 4.43

L 2 33.58 29.00 4.58

+34 34.93 29.17 5.16 5.20'

6"

BR 17

0 34.36 29.20 5.16 100 6"

1 34.81 30.20 4.61

2 35.91 31.20 4.71

3 36.46 32.20 4.26

+68 37.21 32.88 4.33 6" 4.60'

⁺⁷⁵
= Sta 210 Main

In Ditch N side Hwy Bridge
Note - Elevations taken Hwy D

End - N. Hwy F N 5 & Sec 5

= Sta 216 Main

End - N 5 & Sec 5

Sta	Elev	Gr	Cut	% Gr	Av Max Min
0	34.36	29.00	5.36	4.0	10"
1	33.09	29.40	3.69		
2	35.19	29.80	5.39		
3	35.64	30.20	5.44		
4	35.94	30.60	5.34		
5	35.84	31.00	4.84		
6	36.65	31.40	5.25		
7	36.95	31.80	5.15		
8	37.45	32.60	4.85		10" x 5.00'
9	38.15	33.40	4.75		8"
10	38.80	34.20	4.60		
11	39.80	35.00	4.80		
12	40.46	35.80	4.66		
13	41.28	36.60	4.68		
14	42.53	37.40	5.13		
15	43.48	38.20	5.28		

= Sta 216 Main

10 small pond

L 5

6

7

8

9

10

11

V+17

12

13

14

15

Sta Elev Gr Cut Size ^{% Gr} ^{Av Max.} ^{Min}

16 44.23 39.00 5.23 80 8"

17 44.88 39.80 5.08

18 45.82 40.60 5.22

19 46.48 41.40 5.08

20 47.28 42.20 5.08 $\frac{8"}{6"} \times 5.00$

21 48.23 43.00 5.23

22 49.13 43.80 5.33

23 49.66 44.60 5.06

+82 50.21

+90 49.26

+94 50.71

24+12 51.51 45.50 6.01

+30 49.01

+47 50.61 45.77 4.84 6" 5.30

W Hwy A

W Hwy D

= Sta 0 BTR 18-A.

E Hwy E Line Sec 5

E. Hwy D

End - E Hwy A

Sta Elev Gr Cut Size ^{9.65} Av. ^{MAX} Min

0 50.71 45.45 4.26 ⁵⁰ 6"

1 50.16 45.95 4.21

2 50.31 46.45 3.86

L: 3 51.21 46.95 4.26

+75 52.46

+95 51.11

4+05 52.56 47.47 5.09 6" 46'

BR 18-A-1

0 51.21 46.95 4.26 ⁴⁰ 6"

L: +63 51.06

+90 52.76

1+05 51.71

1+12 52.16 47.39 4.77 6" 460

= Sta 23+94 BR 18

= Sta 0 BR 18-A-1

± E-W Hwy

S-W Hwy D

End N.E. Cor post sec 8

= Sta 3 BR 18-A.

N-E Hwy D

± E-W Hwy

S-W Hwy D

End N.W. Cor post sec 9.

Sta	Elev	Gr	Gut	% Gr	Av Size	Max	Min
-----	------	----	-----	------	---------	-----	-----

0	35.30	30.40	4.90	80	6"		
---	-------	-------	------	----	----	--	--

+50	33.40						
-----	-------	--	--	--	--	--	--

1	35.25	31.20	4.05				
---	-------	-------	------	--	--	--	--

2	36.80	32.00	4.80				
---	-------	-------	------	--	--	--	--

3	37.30	32.80	4.50				
---	-------	-------	------	--	--	--	--

4	38.00	33.60	4.40				
---	-------	-------	------	--	--	--	--

+78	39.05	34.32	4.73		6"	4.50	
-----	-------	-------	------	--	----	------	--

= Sta 227 Main

Ditch King

End - N+5 E Sec 5

Sta Elev Gr Gut ^{9.65} Size ^{Av Max} ^{Mir}

0 36.33 30.70 5.63 10 14'

= Sta 234 Main

1 35.61 30.80 4.81

2 34.86 30.90 3.96

3 34.91 31.00 3.91

+50 33.96

Ditch King

4 34.86 31.10 3.76

5 35.91 31.20 4.71

6 36.46 31.30 5.16

7 36.14 31.40 4.74

8 35.89 31.50 4.39

9 36.24 31.60 4.64

10 37.79 31.70 6.09 $\times \frac{14''}{50} = 4.70$

11 37.19 32.20 4.99

12 37.82 32.70 5.12

13 38.21 33.20 5.01

14 38.86 33.70 5.16

15 39.46 34.20 5.26

Sta Elev Gr Cut ^{7/8} Size Av. Max. Min

16 40.16 34.70 5.46.50 12"

17 40.76 35.20 5.56

18 41.48 35.70 5.78

19 41.51 36.20 5.31

20 42.21 36.70 5.51

21 42.96 37.20 5.76

#53 42.71 38.70

+62 42.51 38.20

+80 45.41

22 42.61 37.70 4.91

L +16 44.08

23 44.01 38.20 5.81 $\frac{12''}{10''} \times 5.40$

24 44.35 38.70 5.65

25 44.12 39.20 4.92

L 26 44.57 39.70 4.87

27 44.92 40.20 4.72

L 28 45.57 40.70 4.87 $\frac{10''}{8''} \times 5.20$

W Hwy E

W Hwy D

E Hwy E Line Sec 5

E. Hwy D

E. Hwy E = Sta 0 BR 20-A

Sta Elev Gr Cut Size $\frac{70}{100}$ Gr $\frac{AV}{MAX}$ Min

29 46.42 41.20 5.22 50 8'

30 47.36 41.70 5.66 x —

31 48.13 42.70 5.43 $\frac{1.00}{6''}$ $\frac{5''}{6''}$ x 5.30

32 48.68 43.70 4.98

33 49.58 44.70 4.88

34 50.63 45.70 4.93

35 51.43 46.70 4.73

36 52.48 47.70 4.78

+97 53.33 48.67 4.66 6" 4.90

BR 20-H

0 44.08 38.00 6.08 1.00 6"

1 44.08 39.00 5.08

2 44.63 40.00 4.63

3 45.23 41.00 4.23

4 46.88 42.00 4.88

5 46.73 43.00 3.73

6 47.58 44.00 3.58

+18 47.93 44.18 3.75 6" 4.60

End - N + S E SW $\frac{1}{4}$ sec 4

= 22 + 16 BR 20

End - E + W E sec 4

Sta.	Elev	Gr	Gut.	Size	Av Max Min
0	36.68	31.00	5.68	70	6"
1	37.33	31.70	5.63		
2	37.63	32.40	5.23		
3	38.03	33.10	4.93		
4	38.63	33.80	4.83		
5	39.33	34.50	4.83		
6	40.03	35.20	4.83		
+65	40.38	35.65	4.73		5.10

= Sta 236 Main.

= Sta 0 BR 21-A.

End N45 E Sec 5.

BR 21-A.

0	38.63	33.80	4.83	1.00	6"
1	39.83	34.80	5.03		
2	40.38	35.80	4.58		
+49	41.68	36.29	5.39		5.00

= Sta 4 BR 21

End Center Sec 5.

Sta Elev Gr Gut. ^{9.6r} ^{AV MAX} Size Min

0 39.35 33.10 6.25 '16 .14"

= Sta 252 Main

1 38.49 33.26 5.23

2 38.64 33.42 5.22

3 37.04 33.58 3.46

4 37.79 33.74 4.05

5 38.61 33.90 4.71

= Sta 0 BR 22-A.

6 38.84 34.06 4.78

7 39.04 34.22 4.82 $\times \frac{14''}{12''} \times 4.80$

8 39.59 34.96 4.63

+84 40.75

N+5 $\neq$ sec 5.

L 9 40.65 35.70 4.95 $\frac{12''}{10''} \times 4.80$

10 41.70 36.44 5.26

11 42.25 37.18 5.07

12 43.25 37.92 5.33

13 44.25 38.66 5.59

14 45.05 39.40 5.65

+66 45.30

5. Hwy E

+78 44.85

5 Hwy D

Sta Elev Gr Cut. ^{9.6} Size ^{AV} Max Min

15 47.15 40.14 7.01 74

+20 45.25

L +46 46.35

16 46.50 40.88 5.62 $\frac{10''}{8''} \times 5.50$

17 47.05 41.62 5.43

18 48.00 42.36 5.64

19 47.93 43.10 4.83

20 48.50 43.84 4.66

21 49.38 44.58 4.80 $\frac{8''}{6''} \times 5.20$

L +50

22 49.48 45.32 4.16

23 50.53 46.06 4.47

24 51.48 46.80 4.68

25 52.13 47.57 4.56

26 52.33 48.28 4.05

27 53.23 49.02 4.21

+08 53.43 49.08 4.35 6" 4.40

E Hwy Birkawik-Bremer 60

N. Hwy D

N. Hwy E.

End N45 E SW 1/4 Sec 32
Approx 45 Rods N of E/W Hwy

Sta	Elev	Gr	Cut	% Gr.	Av. Size	Max. Min.
0	38.61	34.30	4.31	46	6"	
1	38.49	34.70	3.79			
2	39.69	35.10	4.59			
3	40.54	35.50	5.04			
4	40.29	35.90	4.39			
+75	40.54	36.20	4.34		6" 440	

Av.

Max.

Min.

= Sta 5 BR 22

End NW 1/4 Sec 5 A-
E-W & NW 1/4

Sta	Elev	Gr	Gut	Size	Av Max Min
0	39.59	35.20	4.39.82	8"	
+80					
1	40.25	36.02	4.23		
L. 2	41.45	36.84	4.61		
3	42.15	37.66	4.49		
4	43.25	38.48	4.77		
5	44.45	39.30	5.15	8"	460
6	45.45	40.12	5.33	6"	
7	45.70	40.94	4.76		
8	46.97	41.76	5.21		
9	47.57	42.58	4.99		
10	48.32	43.40	4.92		
11	49.17	44.22	4.95		
12	50.12	45.04	5.08		
13	50.87	45.86	5.01		
14	51.42	46.68	4.74		
+08	51.67	46.74	4.93	6"	5.00

= Sta 8 BR 22.

N+5 E sec 5

End N+5 E NW 1/4 sec 5

Sta Elev. Gr. Cut. Size Min

0 39.09 34.70 4.39 20 10"

1 38.89 34.90 3.99

2 39.19 35.10 4.09

3 39.79 35.30 4.49 $\times \frac{10'}{.60} \times \frac{8''}{.8''} 4.30'$

4 40.79 35.90 4.89

5 41.39 36.30 4.89

6 42.27 37.10 5.17

7 42.93 37.70 5.23

+50 41.43

8 43.48 38.30 5.18

9 44.18 38.90 5.28

10 44.23 39.50 4.73

11 44.58 40.10 4.48

L +50 45.02

12 45.65 40.70 4.95

13 46.00 41.30 4.70 $\frac{8''}{6''} \times 4.90$

14 46.75 41.90 4.85

= Sta 257+50 Main

In pond - Use 200' SP. here

= Sta 0 BR 23-A.

Sta	Elev	Gr	Gut	706r Size	Av Max Min
15	47.25	42.52	4.75	60	6"
16	48.00	43.10	4.90		
17	48.95	43.70	5.25		
18	49.04	44.30	4.94		
+54	50.11				
+70	48.81				
+95	51.61				
19+10	48.51	44.96	3.55		
+30	50.01	45.08	4.93	6"	4.70

W Hwy A

W Hwy D

E Hwy E Line sec 5

E Hwy D

E Hwy E = End.

Approx 16 Rods Not E-W E NE ^{sec 5}/₄

Sta Elev Gr Gut. ^{4.6} Size ^A Max. Min

0	45.02	40.50	4.52 1/4	6'
1	46.25	41.90	4.35	
2	47.25	43.30	3.95	
3	49.25	44.70	4.55	
+61	51.05			
+72	49.60			
+90	52.15			
4+10	50.05	46.24	3.81	
+20	51.80	46.38	5.42	6' 4.20

BR 24

0	39.49	35.90	2.59 3/4	6'
+40	38.74			
1	39.54	36.20	3.34	
2	40.04	36.50	3.54	
3	41.09	36.80	4.29 $\times \frac{1}{1.00}$	
4	41.89	37.80	4.09	
+28	43.09	38.08	5.01	6' 3.80

= Sta 11+50 BR 23

S. Hwy A

S. Hwy D

± Hwy

N Hwy D

N Hwy A = End

Approx 26 Rods W of SE Cor Sec ³²

= Sta 260+8+Main

Ditch channel N end Bridge.

Note ÷ Elevs taken in N. Hwy D.

End SW Cor SE 1/4 SE 1/4 Sec 32

98

BR 25

99

Sta Elev Gr Cut. ^{96r} Size ^{Av} Max ^{Min}

0 44.99 39.40 5.59 30

1 44.68 39.70 4.98

2 44.73 40.00 4.73

3 45.08 40.30 4.78

4 45.38 40.60 4.78

L 5 45.63 40.90 4.73 $\times \frac{12''}{42} \frac{12''}{12} \times 4.90$

6 46.28 41.32 4.96

7 46.61 41.74 4.87

8 46.96 42.16 4.80

+ 46 46.91

L 9 47.36 42.58 4.78

10 47.91 43.00 4.91

11 48.26 43.42 4.84

12 48.52 43.84 4.68

13 49.11 44.26 4.85

14 49.66 44.68 4.98

15 50.26 45.10 5.16

$\frac{12''}{10''} \times 5.00$

= Sta 273 Main

= Sta 0 BR 25-A.

N 45 E $5E\frac{1}{4}$ Sec 32

Sta Elev Gr Cut Size ^{Per} ^{Av} ^{Max} ^{Min}

16 51.01 45.52 5.49 12 10"

17 51.66 45.94 5.72

18 51.96 46.36 5.60

+75 51.94

19 51.99 46.78 5.21

20 52.44 47.20 5.24 x —

21 52.54 48.04 4.80^{.84}

22 53.49 48.88 4.61

+04 53.64

+15 52.54

+30 55.44

+45 54.70

— 52.89

23 55.14 49.72 5.42 $\frac{10''}{8''} \times 5.20$

24 55.68 50.56 5.12

25 56.60 51.40 5.20

26 57.05 52.24 4.81

W Hwy E

W Hwy D

E Hwy E Line Sec 32

= Sta 0 BIR 25-B.

E Hwy D By Sta 22+45

Sta	Elev	Gr	Cut	% Gr	Av Size	Max Min
-----	------	----	-----	------	---------	---------

27	57.75	53.08	4.77	.84		
----	-------	-------	------	-----	--	--

28	58.50	53.92	4.58		8" x 5.00	
----	-------	-------	------	--	-----------	--

29	59.50	57.76	4.74		6"	
----	-------	-------	------	--	----	--

30	60.13	58.60	4.53			
----	-------	-------	------	--	--	--

31	61.20	56.44	4.76			
----	-------	-------	------	--	--	--

32	62.05	57.28	4.77			
----	-------	-------	------	--	--	--

L' 33	63.05	58.12				
-------	-------	-------	--	--	--	--

+10	61.60					
-----	-------	--	--	--	--	--

+32	64.10	58.38	5.72		6" 4.70	
-----	-------	-------	------	--	---------	--

EHwy D.

End EHwy E W Line Sec 33

BR 25-A.

0	44.68	40.10	4.58	50	6"	
---	-------	-------	------	----	----	--

1	44.63	40.90	3.73			
---	-------	-------	------	--	--	--

2	45.68	41.70	3.98			
---	-------	-------	------	--	--	--

3	46.63	42.50	4.13			
---	-------	-------	------	--	--	--

4	47.78	43.30	4.48			
---	-------	-------	------	--	--	--

5	48.63	44.10	4.53			
---	-------	-------	------	--	--	--

+30	49.13	44.34	4.79		6" 4.20	
-----	-------	-------	------	--	---------	--

= Sta 1 BR 25

End N 15 E SE 1/4 Sec 32

BR 25-D

Sta Elev Gr Gut % Gr Size ^{Av} Max Min

0 54.70 49.50 5.20 40 6"

L 1 54.24 49.90 4.34

+05 52.99

+14 54.69 49.96 4.73 6" 470

BR 26

0 46.83 40.75 6.08 57 10"

1 47.06 41.29 5.77

2 47.11 41.83 5.28

3 47.96 42.37 5.59

4 48.21 42.91 5.30

5 49.01 43.45 5.56

6 49.36 43.99 5.37

L 7 49.18 44.53 4.65 $\frac{10''}{8''} \times 5.50$

8 50.53 45.07 5.46

9 50.93 45.61 5.32

10 51.08 46.15 4.93

L +75 51.48

= Sta 22+45 BR 25

[Hwy 1]

End E Hwy E NW cor SW 1/4
SW 1/4 Sec 33

= Sta 278 Main

Note: Elevs. Sta 4-7 taken
in open ditch.

Sta Elev Gr Cut. ^{9.6x} Size ^{Av} ^{Max} ^{Min}

11 51.58 46.69 4.89

12 52.43 47.23 5.20 $\times \frac{.54}{1.00}$

13 52.62 48.23 4.39

+30 53.87

14 54.12 49.23 4.89

$\frac{8''}{6''} \times 5.00'$

15 54.72 50.23 4.49

16 55.62 51.23 4.39

17 56.87 52.23 4.64

18 57.77 53.23 4.54

+50 58.37 53.73 4.64

4.60

EW $\frac{1}{2}$ Sec 32

End N+5 $\frac{1}{2}$ NE $\frac{1}{4}$ Sec 32

280' N of EW $\frac{1}{4}$ E

Sta	Elev	Gr.	Gut	Size	90% Av. Max. Min.
-----	------	-----	-----	------	-------------------------

0	48.07	43.00	5.07	88	10"
---	-------	-------	------	----	-----

1	48.89	43.88	5.01		
---	-------	-------	------	--	--

2	50.39	44.76	5.63		
---	-------	-------	------	--	--

3	51.24	45.64	5.60		
---	-------	-------	------	--	--

4	51.49	46.52	4.97		
---	-------	-------	------	--	--

+50	51.94				
-----	-------	--	--	--	--

5	52.09	47.40	4.69	x—	
---	-------	-------	------	----	--

6	53.31	47.90	5.41		.50
---	-------	-------	------	--	-----

7	54.22	48.40	5.82		
---	-------	-------	------	--	--

8	54.97	48.90	6.07		
---	-------	-------	------	--	--

9	55.37	49.40	5.97		
---	-------	-------	------	--	--

10	55.22	49.90	5.32		
----	-------	-------	------	--	--

11	55.37	50.40	4.97		
----	-------	-------	------	--	--

+05	55.02				
-----	-------	--	--	--	--

12	55.48	50.90	4.58		
----	-------	-------	------	--	--

13	55.85	51.40	4.45		
----	-------	-------	------	--	--

14	56.40	51.90	4.50	x—	.50
----	-------	-------	------	----	-----

= Sta 288 Main.

= Sta 0 BR 27-A.

N45°E SW 1/4 Sec 32 100' S. of E-W 1/4

Sta Elev Gr Cut. $\frac{9}{16}$ Av Max. Size Min

15 57.45 52.70 4.75 $\frac{10}{8} \times 5.20$

16 58.15 53.50 4.65

17 59.10 54.30 4.80

18 60.11 55.10 5.01

19 61.24 55.90 5.34

L +25 61.19

20 62.09 56.70 5.39 $\frac{8}{6} \times 5.00$

21 61.89 57.50 4.39

22 62.49 58.30 4.19

23 63.09 59.10 3.99

24 64.39 59.90 4.49

+24 65.09

+36 64.79

+48 66.69

+60 63.49

+72 64.74 60.47 4.24 $6" \text{ 4.50}$

Note: Elevs Sta 17-22
taken in open ditch.

E Hwy E

E Hwy D

E Hwy W Line Sec 32

W Hwy D

W Hwy E - End

Sta	Elev	Gr	Cut	% Gr Size	Ar. Max Min
-----	------	----	-----	--------------	----------------

0	51.94	47.20	4.74	1.30	6"
---	-------	-------	------	------	----

1	53.19	48.50	4.69		
---	-------	-------	------	--	--

2	54.24	49.80	4.44		
---	-------	-------	------	--	--

3	55.04	51.10	3.94		
---	-------	-------	------	--	--

L + 75	56.44				
--------	-------	--	--	--	--

4	56.69	52.40	4.29		
---	-------	-------	------	--	--

L 5	58.29	53.70	4.59		
-----	-------	-------	------	--	--

6	58.84	55.00	3.84	x —	
---	-------	-------	------	-----	--

7	59.79	55.60	4.29	.60	
---	-------	-------	------	-----	--

8	60.44	56.20	4.24		
---	-------	-------	------	--	--

9	60.84	56.80	4.04		
---	-------	-------	------	--	--

10	61.49	57.40	4.09		
----	-------	-------	------	--	--

+64	61.74	57.78	3.96		6" 4.30.
-----	-------	-------	------	--	----------

= Sta 4+50 BR 27.

End - N+5 & SW 1/4 Sec 32

Sta Elev Gr Gut ⁹⁰⁶ _{Size} ^{Av} ^{Max} ^{Min}

0 61.19 57.20 4.99 120 8"

1 62.87 57.40 5.47 120

2 62.99 57.60 5.39

3 63.39 57.80 5.59

4 62.99 58.00 4.99

5 63.09 58.20 4.89

6 63.19 58.40 4.79

+24 63.74

+32 63.29

+45 65.19

+60 63.29

+71 63.59 58.57 5.05 8" 5.20

= Sta 19+25 BR 27

Note ÷ Elevs Sta 0-2
in Ditch

E Hwy A

E Hwy D

E Hwy W Line Sec 32

W Hwy D

W Hwy A = End

Sta Elev. Gr. Cut. ^{9.6}Size ^{AV}MAX
MIN

0 49.97 44.75 5.22 60 6"

1 50.02 45.35 4.67

2 50.32 45.95 4.37

3 50.47 46.45 3.92

4 51.16 47.15 4.01

5 52.17 47.75 4.42

+ 35 53.02 47.96 5.06 6" ASD

= Sta 293 Main

= End

N 45° E Sec 32 75' N Sec 32

Sta	Elev	Gr	Cut	% Gr	Size	Av. Max Min
-----	------	----	-----	------	------	----------------

0	52.68	47.40	5.28	50	10"	
---	-------	-------	------	----	-----	--

1	52.98	47.90	5.08			
---	-------	-------	------	--	--	--

2	53.53	48.40	5.13			
---	-------	-------	------	--	--	--

3	54.18	48.90	5.28			
---	-------	-------	------	--	--	--

4	54.43	49.40	5.03			
---	-------	-------	------	--	--	--

5	54.78	49.90	4.88			
---	-------	-------	------	--	--	--

+38	55.58					
-----	-------	--	--	--	--	--

6	55.86	50.40	5.46			
---	-------	-------	------	--	--	--

7	56.38	50.90	5.48			
---	-------	-------	------	--	--	--

8	56.63	51.40	5.23			
---	-------	-------	------	--	--	--

9	56.98	51.90	5.08			
---	-------	-------	------	--	--	--

10	57.33	52.40	4.93			
----	-------	-------	------	--	--	--

11	57.63	52.90	4.73			
----	-------	-------	------	--	--	--

12	58.19	53.40	4.79			
----	-------	-------	------	--	--	--

13	58.53	53.90	4.63			
----	-------	-------	------	--	--	--

14	58.82	57.40	4.43			
----	-------	-------	------	--	--	--

L. 15	59.38	57.90	4.48			
-------	-------	-------	------	--	--	--

= Sta 300 Main

N-15 & NW 1/4 sec 32

$$\frac{10''}{8''} \times 5.20$$

Sta Elev Gr Gut. Size ^{% Gr} ^{Av} ^{Max} ^{Min}

16 59.88 55.40 4.48_{.50} 8"

17 60.93 55.90 5.03

18 61.43 56.40 5.03

+65 62.13

+80 61.58

+95 63.93

19 63.33 56.90 6.43

+13 61.02

+23 61.88 57.01 4.87 5.00

E Hwy #

E Hwy D

E Hwy W Line Sec 32

W Hwy D

W Hwy # - End

Sta	Elev	Gr	Gut	% Gr	Size	Av Max Min
-----	------	----	-----	------	------	------------

0	56.90	52.10	4.80	60	6"	
---	-------	-------	------	----	----	--

= Sta 307 Main

1	56.80	52.70	4.10			
---	-------	-------	------	--	--	--

2	57.50	53.30	4.20			
---	-------	-------	------	--	--	--

3	58.30	53.90	4.40	x—		
---	-------	-------	------	----	--	--

2.00

4	60.25	55.90	4.35			
---	-------	-------	------	--	--	--

5	62.20	57.90	4.30			
---	-------	-------	------	--	--	--

6	64.30	59.90	4.40			
---	-------	-------	------	--	--	--

L+50

7	66.50	61.90	4.60			
---	-------	-------	------	--	--	--

8	68.70	63.90	4.80			
---	-------	-------	------	--	--	--

L+50

9	71.30	65.90	5.40			
---	-------	-------	------	--	--	--

10	73.40	67.90	5.50			
----	-------	-------	------	--	--	--

11	75.40	69.90	5.50			
----	-------	-------	------	--	--	--

L. 12	77.20	71.90	5.30			
-------	-------	-------	------	--	--	--

13	78.20	73.90	4.30	x—		
----	-------	-------	------	----	--	--

1.00

14	79.40	74.90	4.50			
----	-------	-------	------	--	--	--

15	80.60	75.90	4.70			
----	-------	-------	------	--	--	--

16	81.79	76.90	4.89			
----	-------	-------	------	--	--	--

6' 4 7/8

End - N+5 CL sec 32

Sta	Elev	Gr	Cut.	%Gr	Size	Av. Max Min
0	60.19	55.20	4.99	1.50	6"	
1	61.25	57.00	4.25			
2	63.25	58.80	4.45			
3	64.70	60.60	4.10			
4	66.90	62.40	4.50			
5	67.95	64.20	3.75			
6	69.64	65.06	4.58			
7	70.91	65.92	4.99			
+73	71.61					
8	71.66	66.78	4.88			
9	72.81	67.64	5.17			
10	73.46	68.50	4.96			
11	74.52	69.36	5.20			
12	75.22	70.22	5.00			
13	75.55	71.08	4.47			
+84	76.65					
+90	76.10					
+95	77.00					

= Sta 312 Main

5 Hwy E

5 Hwy D

= Sta 0 BR 31-A

Sta Elev Gr Cut ^{% Gr} ^{Av} ^{Max} ^{Min} Size

14 77.70 71.94 5.76 .86 6"

+10 78.05

L: +24 77.00

— 75.75

15 77.40 72.80 4.60

L: 16 78.00 73.66 4.34

+60 79.80

+85 78.65

17 79.00 74.52 4.48 4.70

BR 31-A

0 77.00 71.90 5.10 1.00 6"

1 77.05 72.90 4.15

L: 2 78.25 73.90 4.35

+65 80.00

+80 78.05

+85 79.10 74.75 4.35 4.50

± Hwy N Line Sec 32

Hwy
HD by Sta 14+24

± N+5 Hwy

N+W Hwy D

End - S.E. Cor Sec 30

= Sta 13+95 BR 31

± N+5 Hwy

S+W Hwy D

End - NE Cor Sec 31

% Gr Av. Max
Size Min

Sta	Elev	Gr	Gut	Size	Min
0	23.96	18.00	5.96	1.00	8'
1	21.12	19.00	2.12		
2	24.17	20.00	4.17		
3	24.77	21.00	3.77		
4	25.32	22.00	3.32		
5	26.17	23.00	3.17	x —	3.8'
6	27.37			Approx .75	
7	27.97				
8	28.27				
+88	29.27				
9	29.57				
10	29.97				
L +10	30.17				
11	30.60				
12	31.40				
13	32.00				
14	32.80				

Constructed

= Sta 127 Main
Ditch Xing

Note: Tile from sta 1-5
to be taken up & relaid.

100' Not SE Cor
S Line NW $\frac{1}{4}$ NE $\frac{1}{4}$ Sec 17

100' Not SE Cor.
E Line NW $\frac{1}{4}$ NE $\frac{1}{4}$ Sec 17

Sta Elev Gr Cut. ^{% Gr} Size ^{Av} Max Min

15 33.60

16 34.30

17 35.30

18 36.10

19 37.07

20 38.90

21 39.45

22 40.55

23 42.10

24 44.15 ^{Approx.}

+42 45.50 - 41.50 4.00 1.60% 5"11

+79 45.95

+90 44.70

25 46.85 42.59 4.26

+15 47.45

+25 45.20

+42 47.10 43.10 4.00

f.1

Constructed.

Note - Line from Sta

24+42 - 25+42

tube Constructed

S Hwy 1E

S Hwy D

E Hwy N Line sec 17

N Hwy D

N Hwy 1E = End.

Sta Elev Gr Cut. Size ^{% Gr} Av Max. Min

0 24.86 21.00 3.86 .49 ⁷ 10"

= Sta 144 Moio.

1 25.32 21.49 3.83

2 25.82 21.98 3.84

3 26.67 22.47 4.20

4 26.97 22.96 4.01

5 27.12 23.45 3.67

3.8

5.35 27.15 23.62 3.55

6 27.17

7 27.02

+40 27.17

8 27.32

9 27.42

10 27.82

11 28.02

12 28.37

13 28.57

14 28.72

15 28.22

constructed.

N 15 E NW 1/4 Sec 17

Sta Elev Gr Cut $\frac{1}{2}$ br Size Av. Max Min

16 29.17

17 30.12

18 30.37

19 30.72

20 31.72

21 32.00

22 32.37 28.57 3.83 .43 8"

+53 32.12

+70 31.82

+85 33.92

L. 23 32.52 28.97 3.55 $\frac{8'}{6'} = 3.7$

24 32.92 29.40 3.52

25 33.37 29.88 3.54

L. 26 34.12 30.26 3.86

+65 33.97

+85 36.12

27 34.72 30.69 4.03

+13 35.92 30.73 5.19

E Hwy E

E. Hwy D

E Hwy W Line Sec 17

W Hwy D

E Hwy N Line Sec 18

N. Hwy D

End S.E. Cor Sec 7

BRZ

Sta	Elev	Gr	Cut	%Gr	Av	Max
				Size		Min
0	23.30	16.92				
1	23.45	18.92	4.53	43%		
2	23.65	19.35	4.30			
3	23.40	19.78	3.62			
4	23.88	20.21	3.67			
5	24.35	20.64	3.71			
6	24.46	21.07	3.39	15"	3.8	
7	24.74	21.50	3.24	14"		
+80						
8	25.24					
9	25.89					
10	26.55					
11	26.90					
12	27.20					
13	27.70					
14	28.20					
15	28.60					

Construct

= Sage-Briders Main 139

= Sta 125 Main #11

Note: Tile to be taken up
from Sta 0 - Sta 7 and relaid
from Sta 1 - 7.

N+5 & sec 17

140

140

906r Av
MAX
Min

Sta Elev Gr Cut Size Min

16 28.94 25.37

.43

x—

.62

17 29.52

18 30.09

19 30.74

20 31.32

21 31.92

22 32.40

23 32.84

24 33.68 30.36

x—

76

25 34.84

26 35.82

27 36.40

28 36.22

29 37.20

30 38.47

31 39.52 35.68

x—

.30

32 39.57

+60

constructed.

= E-W E-SW 1/4 Sec 17

= Sta O B R Z-A

Sta	Elev	Gr	Cut	% Gr	Size	Av Max Min
33	40.02	36.28		X	—	
34	40.81				1.20	
35	42.12					
36	43.37	39.88		X	—	
37	43.86				.25	
38	44.01					
39	43.98					
40	44.59					
41	44.58					
42	44.89	41.38		X	—	
43	45.77				.80	
44	46.57					
45	46.93					
+54	47.64	44.21	3.43			
46+10	47.50	44.66	3.14			

8"

Note 26'-8" to construct
across Hwy

N. Hwy E Present end
S. Hwy E - End
N Line Sec. 20.

Sta Elev Gr Cut

%Gr

Size

0 40.02 36.46 .78 6"

1 39.77

2 40.02

3 41.22 38.80

x —
58

4 42.12 39.38

x —
30

5 41.62

6 41.84

7 42.87 40.28

x —
106

8 43.48

9 44.40

10 46.47

11 47.37

12 48.80

+ 70 49.62 52.43

-5+9 32+60 Br Z.

Note - BRZ-A is
constructed as A Line
of Sage-Briden District

End W Hwy at E Line Sect 8

146

BR. 2

147

Sta.	Elev	Gr	Cut.	Water size	Av Max Min
0		8.50		.06%	
0+25	12.29	8.52	3.77		
1+25	11.49	8.58	2.91		
2+25	11.54	8.64	2.90		
3+25	11.79	8.70	3.09		
4+25	12.09	8.76	3.33		
5+25	12.34	8.82	3.52		
6+25	12.44	8.88	3.56		
7+25	12.44	8.94	3.50		
8+25	12.64	9.00	3.64		
9+25	12.69	9.06	3.63		
10+25	12.79	9.12	3.67		
11+25	12.89	9.18	3.71		
12+25	12.69	9.24	3.45		
13+25	12.34	9.30	3.04		
14+25	12.64	9.36	3.28		
15+25	12.84	9.42	3.42		

4.0' Bottom O.D. slope 1:1

outlet in Crane Creek N side Hwy
S Line Sec 10.

B.M. Elev 14.14 = Spike in W. pile

N. side Hwy. W end Bridge
S. Line Sec 10.H₂O Level ^{stg 0} 3/30/21 = Elev. 9.39

Crane Creek bed stg 0 = 7.89

Sta Elev Gr Cnt. %Gr Size Av.

16+25 12.71 9.48 3.23 .06 0.0,

17+25 12.81 9.54 3.27

18+25 12.86 9.60 3.26

19+25 13.16 9.66 3.50

19+75 9.69 3.8
10.14 .08' 22"

20 = E Hwy 15.4

20+25 14.56 10.18 4.38

21+25 13.91 10.26 3.65
= 28+21

Continued on Pp 60 Book 5

BR 2-A

0 14.56 10.50 4.06 5' 6"

+15 14.75

+41 12.99

+60 13.99 10.80 3.19

= End of 0.0

= Sta 0 Br 2-A

= Sta 20+25 Br 2
E Hwy

BM	Elev.		
#32	46.48	Spike in	1 st Tel past W of W willow N side BR9 Hwy 5 Line Sec 17 - Opposite Sta 31 1/2
#33	36.14	Top of large	boulder in pasture 500' N of S Line Sec 17 - 50' E Sta 10 BR 9-A.
#34	35.67	Spikes Near	W end 5 cap plank culvert N Line Sec 8
#35	42.53	Highest point	large black boulder W of Hwy Near SE Cor NE 1/4 #5 Sec 6
#36	48.31	Top of largest	rock 10 SW Cor NE 1/4 NE 1/4 Sec 6
#37	54.61	Spike in SW	Cor. post S.E. 1/4 SE 1/4 Sec 31 - Bremer ⁶⁰
#38	45.25	Spike in	N.E. Cor. post Sec 7
#39	55.02	Top of S.E.	Cor. N. end Ewing Culvert at NW Cor Sec 9
#40	44.30	Iron bar	driven in boulder E line Fence Sec 5 400' S of E-W 1/4 E.

154

155

156

157

TABLE IX.—CALCULATION OF EARTHWORK.

Width	HEIGHT														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	.02	.04	.06	.07	.08	.11	.13	.15	.17	.18	.20	.22	.24	.26	.28
2	.04	.07	.11	.15	.18	.22	.26	.30	.33	.37	.41	.44	.48	.52	.56
3	.06	.11	.17	.22	.28	.33	.39	.44	.50	.56	.61	.67	.72	.78	.83
4	.07	.15	.22	.30	.37	.44	.52	.59	.67	.74	.81	.89	.96	1.04	1.11
5	.09	.19	.28	.37	.46	.56	.65	.74	.83	.93	1.02	1.11	1.20	1.30	1.39
6	.11	.22	.33	.44	.56	.67	.78	.89	1.00	1.11	1.22	1.33	1.44	1.55	1.67
7	.13	.26	.39	.52	.65	.78	.91	1.04	1.16	1.30	1.42	1.55	1.68	1.81	1.94
8	.15	.30	.44	.59	.74	.89	1.04	1.19	1.33	1.48	1.63	1.78	1.92	2.08	2.22
9	.17	.33	.50	.67	.83	1.00	1.17	1.33	1.50	1.67	1.83	2.00	2.17	2.33	2.50
10	.18	.37	.56	.74	.93	1.11	1.30	1.48	1.67	1.85	2.04	2.22	2.41	2.59	2.78
11	.20	.41	.61	.82	1.02	1.22	1.43	1.63	1.83	2.04	2.24	2.44	2.65	2.85	3.06
12	.22	.44	.67	.89	1.11	1.33	1.56	1.78	2.00	2.22	2.44	2.67	2.89	3.11	3.33
13	.24	.48	.72	.96	1.20	1.44	1.68	1.92	2.16	2.41	2.65	2.89	3.13	3.37	3.61
14	.26	.52	.78	1.04	1.30	1.55	1.81	2.08	2.33	2.59	2.85	3.11	3.37	3.65	3.89
15	.28	.56	.83	1.11	1.39	1.67	1.94	2.22	2.50	2.78	3.06	3.33	3.61	3.89	4.17
16	.30	.59	.89	1.18	1.48	1.78	2.07	2.37	2.67	2.96	3.26	3.56	3.85	4.15	4.44
17	.31	.63	.94	1.26	1.57	1.89	2.20	2.52	2.83	3.15	3.46	3.78	4.09	4.41	4.72
18	.33	.67	1.00	1.33	1.67	2.00	2.33	2.67	3.00	3.33	3.67	4.00	4.33	4.67	5.00
19	.35	.70	1.06	1.41	1.76	2.11	2.46	2.82	3.17	3.52	3.87	4.22	4.57	4.92	5.28
20	.37	.74	1.11	1.48	1.85	2.22	2.59	2.96	3.33	3.70	4.07	4.44	4.81	5.18	5.56
21	.39	.78	1.17	1.55	1.94	2.33	2.72	3.11	3.50	3.89	4.28	4.67	5.06	5.44	5.83
22	.41	.81	1.22	1.63	2.04	2.44	2.85	3.26	3.67	4.07	4.48	4.89	5.30	5.70	6.11
23	.43	.85	1.28	1.70	2.13	2.56	2.98	3.41	3.83	4.26	4.68	5.11	5.54	5.96	6.39
24	.44	.89	1.33	1.78	2.22	2.67	3.11	3.56	4.00	4.44	4.89	5.33	5.78	6.22	6.67
25	.46	.92	1.39	1.85	2.31	2.78	3.24	3.70	4.17	4.63	5.09	5.56	6.02	6.48	6.94
26	.48	.96	1.44	1.92	2.41	2.89	3.37	3.85	4.33	4.82	5.30	5.78	6.26	6.74	7.24
27	.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	6.50	7.00	7.50
28	.52	1.04	1.55	2.07	2.59	3.11	3.63	4.15	4.67	5.18	5.70	6.22	6.74	7.26	7.78
29	.54	1.07	1.61	2.15	2.68	3.22	3.76	4.30	4.83	5.37	5.91	6.44	6.98	7.52	8.06
30	.56	1.11	1.67	2.22	2.78	3.33	3.89	4.44	5.00	5.55	6.11	6.67	7.22	7.78	8.33
31	.57	1.15	1.72	2.30	2.87	3.44	4.02	4.59	5.17	5.74	6.32	6.89	7.46	8.04	8.61
32	.59	1.18	1.78	2.37	2.96	3.56	4.15	4.74	5.33	5.92	6.52	7.11	7.70	8.30	8.89
33	.61	1.22	1.83	2.44	3.05	3.67	4.28	4.89	5.50	6.11	6.72	7.33	7.94	8.55	9.17
34	.63	1.26	1.89	2.52	3.15	3.78	4.40	5.04	5.67	6.29	6.93	7.56	8.18	8.81	9.44
35	.65	1.30	1.94	2.59	3.24	3.89	4.53	5.18	5.83	6.48	7.13	7.78	8.42	9.08	9.72
36	.67	1.33	2.00	2.67	3.33	4.00	4.66	5.33	6.00	6.67	7.33	8.00	8.67	9.33	10.00
37	.68	1.37	2.06	2.74	3.42	4.11	4.79	5.48	6.17	6.85	7.54	8.22	8.91	9.59	10.28
38	.70	1.41	2.11	2.82	3.52	4.22	4.92	5.63	6.33	7.03	7.74	8.44	9.15	9.85	10.56
39	.72	1.44	2.17	2.89	3.61	4.33	5.05	5.78	6.50	7.22	7.95	8.67	9.39	10.11	10.83
40	.74	1.48	2.22	2.96	3.70	4.44	5.18	5.92	6.67	7.41	8.15	8.89	9.63	10.37	11.11

Table gives cu. yds. in 1 ft. of a triangle of given width and height. Corrections for tenths of width are one tenth the values found under each height considering the widths from 1 to 9 as tenths and similarly the corrections for tenths of height are one tenth the figures opposite width considering the heights from 1 to 9 as tenths. Thus if $w = 16.2$ and $h = 5.3$, cu. yds. $= 1.434 + .028 + .089 = 1.597$ cu. yds. or practically 160 cu. yds. per 100 ft. If w exceeds 40 ft., use one half and multiply result by 2, if both w and h are large use one half of each and multiply result by 4. Any cross-section may be divided into triangles by the following rule. To the triangle of the sum of the outside cuts (or fills) $= h$, and $\frac{1}{2}$ the roadbed $= w$, add the triangles formed by taking the distance out to each break in turn ($= w$'s) by the difference between the cuts (or fills) on each side of it ($= h$'s) always subtracting the outer from the inner.

TABLE IX.—CALCULATION OF EARTHWORK.

Width	HEIGHT														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	.02	.04	.06	.07	.08	.11	.13	.15	.17	.18	.20	.22	.24	.26	.28
2	.04	.07	.11	.15	.18	.22	.26	.30	.33	.37	.41	.44	.48	.52	.56
3	.06	.11	.17	.22	.28	.33	.39	.44	.50	.56	.61	.67	.72	.78	.83
4	.07	.15	.22	.30	.37	.44	.52	.59	.67	.74	.81	.89	.96	1.04	1.11
5	.09	.19	.28	.37	.46	.56	.65	.74	.83	.93	1.02	1.11	1.20	1.30	1.39
6	.11	.22	.33	.44	.56	.67	.78	.89	1.00	1.11	1.22	1.33	1.44	1.55	1.67
7	.13	.26	.39	.52	.65	.78	.91	1.04	1.16	1.30	1.42	1.55	1.68	1.81	1.94
8	.15	.30	.44	.59	.74	.89	1.04	1.19	1.33	1.48	1.63	1.78	1.92	2.08	2.22
9	.17	.33	.50	.67	.83	1.00	1.17	1.33	1.50	1.67	1.83	2.00	2.17	2.33	2.50
10	.18	.37	.56	.74	.93	1.11	1.30	1.48	1.67	1.85	2.04	2.22	2.41	2.59	2.78
11	.20	.41	.61	.82	1.02	1.22	1.43	1.63	1.83	2.04	2.24	2.44	2.65	2.85	3.06
12	.22	.44	.67	.89	1.11	1.33	1.56	1.78	2.00	2.22	2.44	2.67	2.89	3.11	3.33
13	.24	.48	.72	.96	1.20	1.44	1.68	1.92	2.16	2.41	2.65	2.89	3.13	3.37	3.61
14	.26	.52	.78	1.04	1.30	1.55	1.81	2.08	2.33	2.59	2.85	3.11	3.37	3.63	3.89
15	.28	.56	.83	1.11	1.39	1.67	1.94	2.22	2.50	2.78	3.06	3.33	3.61	3.89	4.17
16	.30	.59	.89	1.18	1.48	1.78	2.07	2.37	2.67	2.96	3.26	3.56	3.85	4.15	4.44
17	.31	.63	.94	1.26	1.57	1.89	2.20	2.52	2.83	3.15	3.46	3.78	4.09	4.41	4.72
18	.33	.67	1.00	1.33	1.67	2.00	2.33	2.67	3.00	3.33	3.67	4.00	4.33	4.67	5.00
19	.35	.70	1.06	1.41	1.76	2.11	2.46	2.82	3.17	3.52	3.87	4.22	4.57	4.92	5.28
20	.37	.74	1.11	1.48	1.85	2.22	2.59	2.96	3.33	3.70	4.07	4.44	4.81	5.13	5.56
21	.39	.78	1.17	1.55	1.94	2.33	2.72	3.11	3.50	3.89	4.28	4.67	5.06	5.44	5.83
22	.41	.81	1.22	1.63	2.04	2.44	2.85	3.26	3.67	4.07	4.48	4.89	5.30	5.70	6.11
23	.43	.85	1.28	1.70	2.13	2.56	2.98	3.41	3.83	4.26	4.68	5.11	5.54	5.96	6.39
24	.44	.89	1.33	1.78	2.22	2.67	3.11	3.56	4.00	4.44	4.89	5.33	5.78	6.22	6.67
25	.46	.92	1.39	1.85	2.31	2.78	3.24	3.70	4.17	4.63	5.09	5.56	6.02	6.48	6.94
26	.48	.96	1.44	1.92	2.41	2.89	3.37	3.85	4.33	4.82	5.30	5.78	6.26	6.74	7.24
27	.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	6.50	7.00	7.50
28	.52	1.04	1.55	2.07	2.59	3.11	3.63	4.15	4.67	5.18	5.70	6.22	6.74	7.26	7.78
29	.54	1.07	1.61	2.15	2.68	3.22	3.76	4.30	4.83	5.37	5.91	6.44	6.98	7.52	8.06
30	.56	1.11	1.67	2.22	2.78	3.33	3.89	4.44	5.00	5.55	6.11	6.67	7.22	7.78	8.33
31	.57	1.15	1.72	2.30	2.87	3.44	4.02	4.59	5.17	5.74	6.32	6.89	7.46	8.04	8.61
32	.59	1.18	1.78	2.37	2.96	3.56	4.15	4.74	5.33	5.92	6.52	7.11	7.70	8.30	8.89
33	.61	1.22	1.83	2.44	3.05	3.67	4.28	4.89	5.50	6.11	6.72	7.33	7.94	8.55	9.17
34	.63	1.26	1.89	2.52	3.15	3.78	4.40	5.04	5.67	6.29	6.92	7.56	8.18	8.81	9.44
35	.65	1.30	1.94	2.59	3.24	3.89	4.53	5.18	5.83	6.48	7.13	7.78	8.42	9.08	9.72
36	.67	1.33	2.00	2.67	3.33	4.00	4.66	5.33	6.00	6.67	7.33	8.00	8.67	9.33	10.00
37	.68	1.37	2.06	2.74	3.42	4.11	4.79	5.48	6.17	6.85	7.54	8.22	8.91	9.59	10.28
38	.70	1.41	2.11	2.82	3.52	4.22	4.92	5.63	6.33	7.03	7.74	8.44	9.15	9.85	10.56
39	.72	1.44	2.17	2.89	3.61	4.33	5.05	5.78	6.50	7.22	7.95	8.67	9.39	10.11	10.83
40	.74	1.48	2.22	2.96	3.70	4.44	5.18	5.92	6.67	7.41	8.15	8.89	9.63	10.37	11.11

Table gives cu. yds. in 1 ft. of a triangle of given width and height. Corrections for tenths of width are one tenth the values found under each height considering the widths from 1 to 9 as tenths and similarly the corrections for tenths of height are one tenth the figures opposite width considering the heights from 1 to 9 as tenths. Thus if $w = 16.2$ and $h = 3.3$, cu. yds. $= 1.48 + .028 + .089 = 1.597$ cu. yds. or practically 160 cu. yds. per 100 ft. If w exceeds 40 ft., use one half and multiply result by 2, if both w and h are large use one half of each and multiply result by 4. Any cross-section may be divided into triangles by the following rule. To the triangle of the sum of the outside cuts (or fills) $= h$, and $\frac{1}{2}$ the roadbed $= w$, add the triangles formed by taking the distance out to each break in turn ($= w$'s) by the difference between the cuts (or fills) on each side of it ($= h$'s) always subtracting the outer from the inner.

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTION.

Roadway 16 feet wide.

Side Slopes 1 on 1½

For Single Track Embankment.

H	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	II
0	8.0	8.2	8.3	8.5	8.6	8.8	8.9	9.1	9.2	9.4	0
1	9.5	9.7	9.8	10.0	10.1	10.3	10.4	10.6	10.7	10.9	1
2	11.0	11.2	11.3	11.5	11.6	11.8	11.9	12.1	12.2	12.4	2
3	12.5	12.7	12.8	13.0	13.1	13.3	13.4	13.6	13.7	13.9	3
4	14.0	14.2	14.3	14.5	14.6	14.8	14.9	15.1	15.2	15.4	4
5	15.5	15.7	15.8	16.0	16.1	16.3	16.4	16.6	16.7	16.9	5
6	17.0	17.2	17.3	17.5	17.6	17.8	17.9	18.1	18.2	18.4	6
7	18.5	18.7	18.8	19.0	19.1	19.3	19.4	19.6	19.7	19.9	7
8	20.0	20.2	20.3	20.5	20.6	20.8	20.9	21.1	21.2	21.4	8
9	21.5	21.7	21.8	22.0	22.1	22.3	22.4	22.6	22.7	22.9	9
10	23.0	23.2	23.3	23.5	23.6	23.8	23.9	24.1	24.2	24.4	10
11	24.5	24.7	24.8	25.0	25.1	25.3	25.4	25.6	25.7	25.9	11
12	26.0	26.2	26.3	26.5	26.6	26.8	26.9	27.1	27.2	27.4	12
13	27.5	27.7	27.8	28.0	28.1	28.3	28.4	28.6	28.7	28.9	13
14	29.0	29.2	29.3	29.5	29.6	29.8	29.9	30.1	30.2	30.4	14
15	30.5	30.7	30.8	31.0	31.1	31.3	31.4	31.6	31.7	31.9	15
16	32.0	32.2	32.3	32.5	32.6	32.8	32.9	33.1	33.2	33.4	16
17	33.5	33.7	33.8	34.0	34.1	34.3	34.4	34.6	34.7	34.9	17
18	35.0	35.2	35.3	35.5	35.6	35.8	35.9	36.1	36.2	36.4	18
19	36.5	36.7	36.8	37.0	37.1	37.3	37.4	37.6	37.7	37.9	19
20	38.0	38.2	38.3	38.5	38.6	38.8	38.9	39.1	39.2	39.4	20
21	39.5	39.7	39.8	40.0	40.1	40.3	40.4	40.6	40.7	40.9	21
22	41.0	41.2	41.3	41.5	41.6	41.8	41.9	42.1	42.2	42.4	22
23	42.5	42.7	42.8	43.0	43.1	43.3	43.4	43.6	43.7	43.9	23
24	44.0	44.2	44.3	44.5	44.6	44.8	44.9	45.1	45.2	45.4	24
25	45.5	45.7	45.8	46.0	46.1	46.3	46.4	46.6	46.7	46.9	25
26	47.0	47.2	47.3	47.5	47.6	47.8	47.9	48.1	48.2	48.4	26
27	48.5	48.7	48.8	49.0	49.1	49.3	49.4	49.6	49.7	49.9	27
28	50.0	50.2	50.3	50.5	50.6	50.8	50.9	51.1	51.2	51.4	28
29	51.5	51.7	51.8	52.0	52.1	52.3	52.4	52.6	52.7	52.9	29
30	53.0	53.2	53.3	53.5	53.6	53.8	53.9	54.1	54.2	54.4	30
31	54.5	54.7	54.8	55.0	55.1	55.3	55.4	55.6	55.7	55.9	31
32	56.0	56.2	56.3	56.5	56.6	56.8	56.9	57.1	57.2	57.4	32
33	57.5	57.7	57.8	58.0	58.1	58.3	58.4	58.6	58.7	58.9	33
34	59.0	59.2	59.3	59.5	59.6	59.8	59.9	60.1	60.2	60.4	34
35	60.5	60.7	60.8	61.0	61.1	61.3	61.4	61.6	61.7	61.9	35
36	62.0	62.2	62.3	62.5	62.6	62.8	62.9	63.1	63.2	63.4	36
37	63.5	63.7	63.8	64.0	64.1	64.3	64.4	64.6	64.7	64.9	37
38	65.0	65.2	65.3	65.5	65.6	65.8	65.9	66.1	66.2	66.4	38
39	66.5	66.7	66.8	67.0	67.1	67.3	67.4	67.6	67.7	67.9	39
40	68.0	68.2	68.3	68.5	68.6	68.8	68.9	69.1	69.2	69.4	40

Example—If point is 22.6 ft. above grade, how far should it be from center line to be a slope stake point? Ans. from Table 41.9. For same slopes but other widths of roadbed correct above figures by one-half difference in width of roadbed; thus in example above for 20 ft. roadbed distance will be $41.9 + (20 - 16) \div 2$ or 2 ft. added to 41.9 = 43.9. For slopes of 1 on 1 see inside of front cover.