

SEWERAGE GRAD

MAIN LINE 8" PIPE

FR. M. 15TH & E. WITH

FRANCES ^{ON}
16 17 18 19 20 21 22 23 & 24

9

TRANSIT

F. B.

652

652

Showing the difference of latitude and departure in running 80 chains at any course from 1 to 60 minutes.

Minutes.	Lks.	Minutes.	Lks.	Minutes.	Lks.
1	2½	21	49	41	95½
2	4½	22	51½	42	98
3	7	23	53½	43	100½
4	9½	24	56	44	102½
5	11½	25	58½	45	105
6	14	26	60½	46	107½
7	16½	27	63	47	109½
8	18½	28	65½	48	112
9	21	29	67½	49	114½
10	23½	30	70	50	116½
11	25½	31	72½	51	119
12	28	32	74½	52	121½
13	30½	33	77	53	123½
14	32½	34	79½	54	126
15	35	35	81½	55	128½
16	37½	36	84	56	130½
17	39½	37	86½	57	133
18	42	38	88½	58	135½
19	44½	39	91	59	137½
20	46½	40	93½	60	140

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Table for Running on Slopes.

In the following table the first column shows the angle, the second, the number of links to be added to a chain on the slopes, to make one chain, horizontal measurement.

Angle.	Cor. in links.	Angle.	Cor. in links.	Angle.	Cor. in links.	Angle.	Cor. in links.
°		°		°		°	
4	0-24	11	1-88	18	5-14	25	10-54
5	0-38	12	2-24	19	5-76	26	11-26
6	0-55	13	2-63	20	6-42	27	12-24
7	0-78	14	3-06	21	7-11	28	13-37
8	0-98	15	3-53	22	7-85	29	14-34
9	1-24	16	4-02	23	8-64	30	15-47
10	1-55	17	4-50	24	9-47	35	22-07

Francis Bunnigardini

1852

~~1~~ 1

Book 13

Street	Location	Page
C St	S of 15th St	1--3
D St	S of 16th	4
17th	W to C St	4--5
C St	S of 17th	6--7
16th	N of D St	8--10
18th	N of C St	13--14
22nd	N of C St	15
22nd	S of C St	16
19th	S of C St	17
17th	N of C St	18--19
21st	N of C St	20
D St	S of C St	23--24
16 th	E to D	3

E of Curve from mantle

Sta	Elev	Grade	cut
0	35.82	32.00	3.82 3' 9 7/8
+ 10	37.27	32.27	5.05 5' 0 7/8
+ 20	36.94	32.44	4.50 4' 6
+ 31	38.02	32.65	5.36 5' 4 3/8
+ 40	36.28	32.88	3.40 3' 4 7/8
+ 50	37.46	33.09	4.37 4' 4 1/2
+ 67	38.26	33.25	5.01 5' 0 1/2
+ 67	40.75	33.47	7.28 7' 3 3/8
+ 72	40.68	34.02	6.66 6' 8
+ 77	41.09	34.57	6.52 6' 6 1/4
+ 82	41.10	35.11	5.99 5' 11 7/8
+ 87	41.12	35.66	5.46 5' 5 1/2
+ 92	41.05	36.21	4.84 4' 10 7/8
+ 97	41.33	36.32	5.01 5' 0 1/8
+ 107	41.57	36.54	5.03 5' 0 3/8
+ 118	42.72	36.78	5.94 5' 11 1/4
+ 128	44.81	37.00	7.81 7' 9 1/4
+ 139	46.02	37.06	8.96 8' 11 1/2
+ 149	46.10	37.12	8.98 8' 11 3/4
+ 160	46.10	37.18	8.92 8' 11

0.01 5.00

15 7/8 + E

PC at man hole Grade 46.00

+ 42 E 2 15 7/8

PT.

+ 10

13
37
45
10 3/4
207

PC 337 W. of 202 10 1/2

X 2 + 32 Siphon and grade 61.50
Insp 61.00

E. W. Curran 16th St

No	Ch	Grade	cm
2+70	46.40	37.24	9.16 9' 2"
+ 81	46.87	37.30	9.57 9' 6 ³ / ₈
+ 91	46.80	37.36	9.44 9' 5 ¹ / ₄
8+02	46.75	37.42	9.33 9' 4"
+ 12	46.51	37.48	9.03 9' 0 ³ / ₈
+ 16	46.57	37.50	9.07 9' 0 ⁷ / ₈
+ 26	46.75	37.55	9.20 9' 2 ³ / ₈
+ 51	47.22	37.66	9.56 9' 6 ³ / ₄
+ 76	47.58	37.78	9.80 9' 9 ⁷ / ₈
+ 01	47.58	37.90	9.68 9' 8 ¹ / ₈
+ 26	47.76	38.01	9.75 9' 9"
+ 51	47.76	38.13	9.63 9' 7 ⁵ / ₈
+ 76	48.16	38.25	9.91 9' 10 ¹ / ₈
8+01	48.32	38.37	9.95 9' 11 ³ / ₈
+ 26	48.24	38.48	9.76 9' 9 ¹ / ₈
+ 51	48.62	38.60	10.02 10' 0 ¹ / ₄
+ 76	48.74	38.72	10.02 10' 0 ¹ / ₄
+ 96	49.46	38.81	10.65 10' 7 ⁷ / ₈
6+14		38.91	
6+36		39.00	

x

x

573
1001

2+76 NZ E 1/2 St Y

3+01 Y

PT 16th St NZ E 1/2 St

Y Lateral

" "

" "

" "

" "

" "

" "

" "

" "

St & St-

50.50 Grade

5+94 8+4 Y

50. Inaps

St. 606 ft total pipe

S 4 17
16th & 4th Curve S 4 17-

Sta	Elev	Grade	cut-
0	49.02	39.51	9.52 9' 6 1/4"
+9	49.20	39.63	9.57 9' 6 1/8"
+19	49.32	39.78	9.57 9' 6 1/2"
+29	49.38	39.92	9.46 9' 5 1/2"
+39	49.77	40.07	9.70 9' 8 3/8"
+49	49.56	40.21	9.35 9' 4 1/4"
+55	49.44	40.30	9.14 9' 1 1/4"
+65	49.17	40.44	8.73 8' 8 3/4"
+90	48.44	40.81	7.63 7' 7 5/8"
1+15	48.44	41.17	7.27 7' 3 1/4"
+40	46.35	41.53	4.82 4' 9 1/8"
+65	46.38	41.90	4.48 4' 5 3/4"
+90	46.74	42.26	4.48 4' 5 3/4"
2+06	47.32	42.52	4.80 4' 8 5/8"
+19	47.58	42.68	4.90 4' 10 1/8"
+30	47.86	42.84	5.02 5' 0 1/4"
+41	48.19	43.00	5.19 5' 2 1/4"
+52	49.12	43.06	6.06 6' 0 3/4"
+63	49.02	43.13	5.89 5' 10 3/4"
+74	49.00	43.18	5.82 5' 9 7/8"
+85	48.77	43.25	5.52 5' 6 1/4"

1.4522: 100

at 40 Y C 2 16 X

PT S 4 17-

Y

52.52

42.52

11

52.97 33' West of 17th on 2

PC: As 17th S 4 17- 2+0.8 in road

6x8 Y South for 17th S 4 17- 2+28.0

X 2+42 W 2 17th W grade 53.5

53.00 end of station

Curve to 17th 17th St - to C.

Sta	Elev	Grade	Dist
2+96	49.01	43.31	5.70 5' 8 ³ / ₈
3+07	49.07	43.38	5.69 5' 8 ¹ / ₄
+18	49.27	43.44	5.83 5' 10
+29	48.86	43.50	5.36 5' 4 ³ / ₈
+32	48.86	43.52	5.34 5' 4 ¹ / ₄
+47	48.86	43.60	5.26 5' 3 ¹ / ₈
+72	48.31	43.75	4.56 4' 6 ³ / ₄
+97	49.06	43.89	5.17 5' 2
4+22	48.67	44.03	4.64 4' 7 ³ / ₄
+47	46.25	44.17	2.08 2' 1
+72	46.08	44.32	1.76 1' 9 ³ / ₈
+97	49.47	44.46	5.01 5' 0 ¹ / ₈
5+22	50.08	44.60	5.48 5' 5 ³ / ₄
+47	50.54	44.74	5.80 5' 9 ⁵ / ₈
+62	50.78	44.83	5.95 5' 11 ³ / ₈
+72	50.82	44.88	5.94 5' 11 ¹ / ₄
+82	50.90	44.94	5.96 5' 11 ¹ / ₂
+92	50.91	45.00	5.91 5' 10 ⁷ / ₈
6+12	51.06	45.15	5.91 5' 10 ⁷ / ₈
+12	50.70	45.31	5.39 5' 8 ³ / ₈
+22	50.77	45.46	5.31 5' 3 ³ / ₄

556981140

2+97 N2E W Y

3+22 Y completed July 29/84

P.T. 17th St 35'

Y

Y

Y

Y

Y

Y

Y

Y

Y

35' Soft S. Line C on 17th

5+82 8x6 Y for 17th St North

62
35
55.97

Curve 17 to C + C A - E of 17

Sta	Elev	Grade	cut-
6+32	50.99	45.62	5.37 5' 4 1/2"
+42	51.15	45.77	5.38 5' 4 7/8"
+52	51.07	45.93	5.14 5' 1 3/4"
+62	50.99	46.08	4.91 4' 10 7/8"
+72	51.20	46.24	4.96 4' 11 1/2"
+90	51.17	46.51	4.66 4' 8"
7+15	51.51	46.90	4.61 4' 7 3/8"
+40	51.89	47.29	4.60 4' 7 1/4"
+65	51.93	47.67	4.26 4' 3 1/8"
+90	52.35	48.06	4.29 4' 3 1/2"
8+15	52.73	48.45	4.28 4' 3 3/8"
+40	51.85	48.83	3.02 3' 0 1/4"
+60	51.07	49.14	1.93 1' 7 1/8"
+80	52.31	49.45	2.86 2' 10 3/8"
9+	52.90	49.76	3.14 3' 1 3/4"
+20	52.63	50.07	2.56 2' 6 3/4"
+45	51.49	50.45	1.04 1' 0 1/2"
+70	51.40	50.84	0.56 0' 6 3/4"
+95	51.92	51.23	0.69 0' 8 1/4"
10+20	53.58	51.61	1.97 1' 11 7/8"

2011/2/14/51

6+40 E L 17 1/2 St - 1/2 Latrod

P.T.

W.L. 18 Imp. 57.30
Grade 57.80

78 1/2 St
8+88 8+68 11+4

E.L. 18 1/2 St

C. A. E. of 17th

Sta	Clv	Grade	em-	
10+43	53.74	52.00	1.74	1' 8 ⁷ / ₈ x
+70	54.67	53.09	1.58	1' 7
+95	57.33	54.17	3.16	3' 2
11+20	60.83	55.26	5.57	5' 6 ⁷ / ₈
+40	61.62	56.13	5.49	5' 5 ⁷ / ₈
+60	61.42	57.00	4.42	4' 5 x
+80	64.59	59.00	5.59	5' 7 ⁷ / ₈
12	68.80	61.00	7.80	7' 9 ⁵ / ₈
+25	72.91	63.50	9.41	9' 4 ⁷ / ₈
+50	74.32	66.00	8.32	8' 3 ⁷ / ₈
+75	74.78	68.50	6.28	6' 3 ⁷ / ₈
13	75.96	71.00	4.96	4' 11 ¹ / ₂
+25	77.99	73.50	4.49	4' 5 ⁷ / ₈
+50	80.77	76.00	4.77	4' 9 ¹ / ₄
+75	83.66	78.50	5.16	5' 2
14	87.04	81.00	6.04	6' 0 ¹ / ₂ x
+20	89.45	82.36	7.09	7' 1 ⁷ / ₈
+40	90.64	83.71	6.93	6' 11 ⁷ / ₈
+60	89.97	85.07	4.90	4' 10 ⁷ / ₈
+80	88.87	86.43	2.44	2' 5 ¹ / ₄

43478.100

10.100

14+13
 WL 19th H - Grade 65.50 ✓
 Insp. 65.00
 19th H -

EL 19th H -

WL 20th H - Grade 87.50 ✓
 14+14 I.S. 87.00
 20th H -

EL 20th H -

C St - E of 17th

Sta	Elev	Grad	cont-	
15+05	90.36	88.12	2.24	2' 2 ³ / ₈
+30	95.02	89.82	5.20	5' 2 ³ / ₈
+55	97.88	91.52	6.36	6' 4 ³ / ₈
+80	99.64	93.21	6.43	6' 5 ³ / ₈
16+05	101.40	94.91	6.49	6' 5 ³ / ₈
+30	103.43	96.61	6.82	6' 9 ³ / ₈
+55	106.75	99.30	8.45	8' 5 ³ / ₈
+75	110.70	100.00	10.70	10' 8 ³ / ₈
+95	111.01	102.13	8.88	8' 10 ³ / ₈
17+15	111.37	104.27	7.10	7' 1 ³ / ₈
+35	111.83	106.40	5.43	5' 5 ³ / ₈
+55	112.29	108.53	3.76	3' 9 ³ / ₈
+80	114.88	111.20	3.68	3' 8 ³ / ₈
18+05	118.80	113.87	4.93	4' 11 ³ / ₈
+30	124.88	116.53	8.35	8' 4 ¹ / ₄
+55	129.01	119.20	9.81	9' 9 ³ / ₄
+80	131.48	121.87	9.61	9' 7 ³ / ₈
19+05	131.87	124.53	7.34	7' 4 ³ / ₈
+30	133.20	127.20	6.00	6' 0
+55	135.11	129.87	5.24	5' 2 ³ / ₈
+80	137.63	132.00	5.63	5' 7 ³ / ₈

Total length of pipe 3738

6.7857115

10.6666100

16+42 Reducer 8 to 6
 MI 21st H Grade 113.40 ✓
 16+91 6" IN 16+93 6" IN 113.00
 21st
 CL 21st

MI 22 Grade 139.60 ✓
 26+6 2 1/2" IN 139.00 Inp.
 19+72 IN 19+74 IN S.

16th M. N. J. S.

57.76	39.72		
+ 96	49.38	39.81	10.57 10' 6 ³ / ₈
6+16	49.75	39.91	10.84 10' 10 ¹ / ₈
+ 36	50.01	39.00	11.01 9' 0 ¹ / ₂ x
+ 56	50.03	39.33	11.70 11' 8 ³ / ₈
+ 81	49.38	40.00	9.38 9' 4 ⁵ / ₈ ✓
7+06	50.94	43.50	7.44 7' 5 ¹ / ₄ ✓
+ 31	51.10	47.00	4.12 4' 1 ¹ / ₂ x
+ 56	51.76	47.57	4.19 4' 2 ¹ / ₄
+ 81	52.53	48.15	4.38 4' 4 ⁷ / ₈
+ 06	53.05	48.72	4.33 4' 4
+ 31	53.75	49.29	4.46 4' 5 ¹ / ₂
+ 56	54.72	49.87	4.85 4' 10 ¹ / ₄
+ 81	55.90	50.44	5.46 5' 5 ¹ / ₂
9+06	56.76	51.02	5.74 5' 8 ¹ / ₂
+ 31	57.55	51.59	5.96 5' 11 ¹ / ₂
+ 56	59.04	52.16	6.88 6' 10 ¹ / ₈ +
+ 76	59.19	52.62	6.57 6' 6 ¹ / ₈
+ 96	59.30	53.08	6.22 6' 2 ³ / ₈
10+16	59.33	53.54	5.79 5' 9 ¹ / ₂
+ 36	59.79	54.00	5.79 5' 9 ¹ / ₂ x

2000

S.L.S. di-

S.H.

N.L.S. di-

Quicks. 59.00 ✓

S.L.C. di- Grade 59.5

S.H.

N.L.C.

16th St - Vol 2B

Sta	Elev	Grad	cut-
10+	61.60	54.92	5.84 5'10 ³ / ₈
+ 86	61.60	55.84	5.76 5'9 ¹ / ₈
11+	62.26	56.76	5.50 5'6
+ 86	63.11	57.68	5.43 5'5 ¹ / ₈
+ 61	64.15	58.61	5.54 5'6 ¹ / ₂
+ 86	64.93	59.53	5.40 5'4 ⁷ / ₈
12+	65.90	60.45	5.45 5'5 ³ / ₈
+ 86	66.87	61.37	5.50 5'6
+ 61	67.90	62.29	5.61 5'7 ³ / ₈
+ 86	68.84	63.21	5.63 5'7 ⁵ / ₈
13+	69.71	64.13	5.58 5'7
+ 86	70.86	65.05	5.81 5'8 ³ / ₄
+ 66	71.75	65.79	5.96 5'11 ¹ / ₂
+ 76	72.85	66.53	6.32 6'3 ⁷ / ₈
+ 96	73.98	67.26	6.72 6'8 ⁵ / ₈
14+16	75.15	68.00	7.15 7'1 ⁷ / ₈ x
+ 41	77.56	71.00	6.56 6'6 ³ / ₄
+ 86	80.47	74.00	6.47 6'5 ⁵ / ₈
+ 91	82.98	77.00	5.98 5'11 ³ / ₄
15+	86.02	80.00	6.02 6'0 ¹ / ₄

36842.110

Imp. 71.00 ✓
N.L.B. St - Grade 71.5

B St -

N.L.B. St -

16⁴/₇ N-N of 28

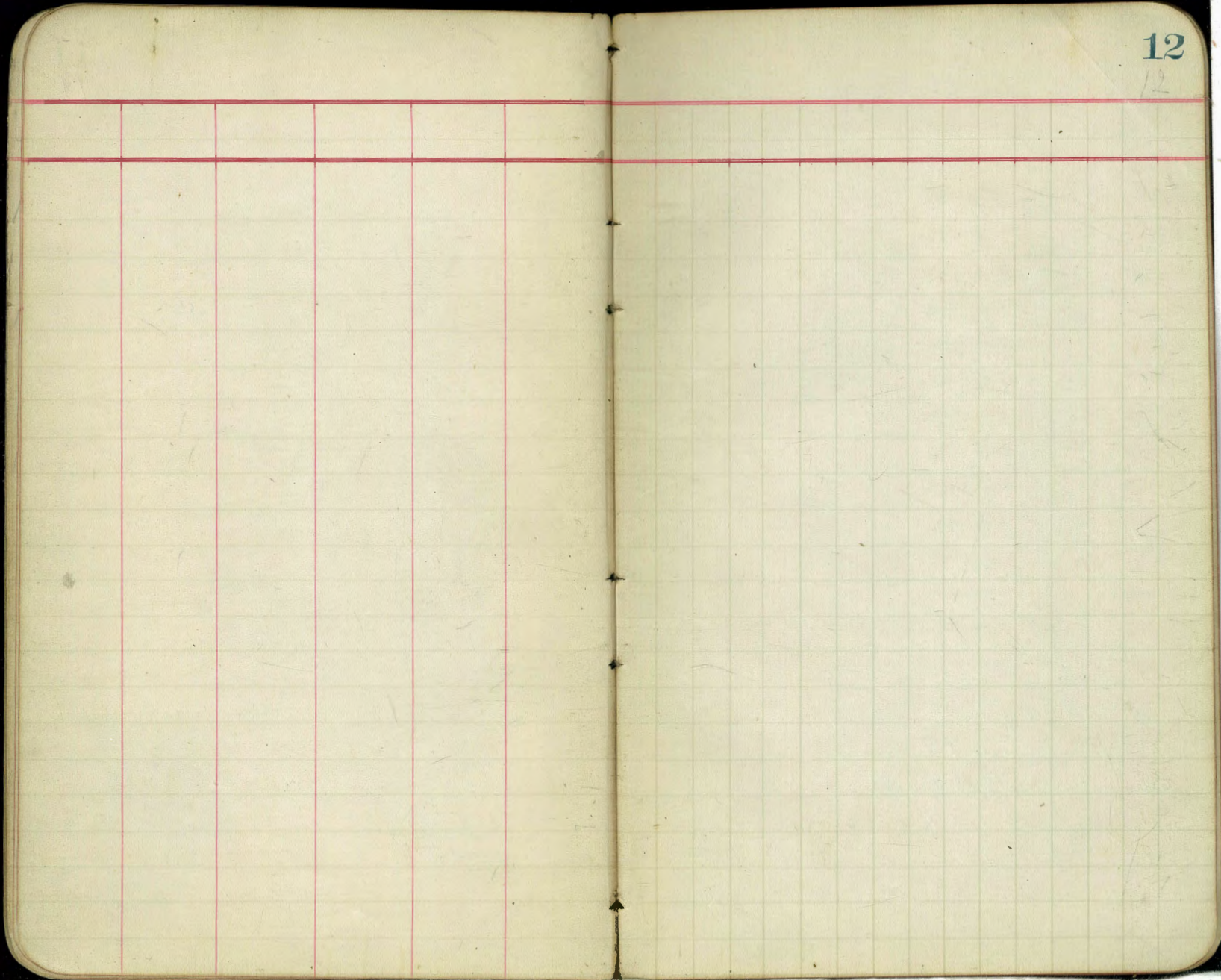
Sta	Elv	Head	cm
16+41	89.08	83.00	6.086' 1
+66	92.03	86.00	6.036' 0 $\frac{3}{8}$
+91	94.78	89.00	5.785' 9 $\frac{3}{8}$
16+16	97.99	92.00	5.995' 11 $\frac{3}{8}$
+41	100.98	95.00	5.985' 11 $\frac{3}{8}$
+66	104.08	98.00	6.086' 1
+91	107.19	101.00	6.196' 2 $\frac{1}{4}$
17+16	110.47	104.00	6.476' 5 $\frac{3}{8}$

12.110

S L A M - Flush tank 110.6
 total length of 6" pipe 11.20

17th Nov 1900

11



12

18th St. K of E

Sta	Elev	Grade	cut
0	57.73	49.64	2.09 2' 1/8
+10	57.82	49.94	1.88 1' 10 ⁵ / ₈
+20	52.31	50.24	2.07 2' 0 ⁵ / ₈
+30	53.53	50.53	3.00 3' 0
+40	54.17	50.83	3.34 3' 4 ⁵ / ₈
+50	54.37	51.13	3.24 3' 2 ⁵ / ₈
+56	54.55	57.30	3.25 3' 3
+66	54.75	57.58	3.17 3' 2
+91	55.58	52.29	3.29 3' 3 ¹ / ₂
1+16	56.07	52.99	3.08 3' 1
+41	56.39	53.71	2.68 2' 8 ⁵ / ₈
+66	57.04	54.41	2.63 2' 7 ⁵ / ₈
+91	57.75	55.12	2.63 2' 7 ⁵ / ₈
2+16	58.70	55.83	2.87 2' 10 ¹ / ₂
+41	60.36	56.54	3.82 3' 9 ⁵ / ₈
+66	62.03	57.24	4.79 4' 9 ¹ / ₂
+91	63.37	57.95	5.42 5' 5
3+16	64.23	58.66	5.57 5' 6 ⁵ / ₈
+41	64.76	59.37	5.39 5' 8 ³ / ₄
+61	65.44	59.93	5.51 5' 6 ⁵ / ₈
+81	66.18	60.50	5.68 5' 8 ⁵ / ₈

x
2.96
1.00

2.8308100

pe

0+41 x XL C. M-AZ.

PT 106⁵/₈

X Lateral

SI B St - ^{Drisk} 66.00 ✓
Grade 66.50

B St -

18th 11-107 C

Sta	Elev	Grade	Cut
4+01	67.30	61.53	5.775 9 ¹ / ₄
+21	68.44	62.56	5.885 10 ³ / ₈
+46	69.84	63.84	6.006'0
+71	71.14	65.13	6.016'0 ¹ / ₂
+96	72.96	66.42	6.546'6 ¹ / ₂
5+21	74.65	67.70	6.956'11 ³ / ₈
+46	76.47	68.99	7.487'5 ³ / ₄
+71	77.25	70.27	6.986'11 ¹ / ₄
+96	78.01	71.56	6.456'5 ³ / ₈
6+21	78.82	72.85	5.975'11 ⁵ / ₈
+46	80.05	74.13	5.925'11
+71	81.02	75.42	5.605'7 ¹ / ₄
+96	81.81	76.70	5.115'7 ³ / ₈
7+21	83.28	78.00	5.285'3 ³ / ₈ x
Total length of pipe			7+26

671.19

N2 B 61-

S2 A 61- Flush Tank

8450

2.2nd St. Mt. C

Sta	Elev	Grade	Cut
0	136.85	132.40	4.45 4 5/8
+13	138.38	132.67	5.71 5 8/2
+23	139.55	132.88	6.67 6 8
+33	140.42	133.08	7.34 7 4/8
+43	140.74	133.29	7.45 7 4 3/8
+53	140.65	133.50	7.15 7 1/8
+59	140.41	133.62	6.79 6 9/2
+69	139.37	133.83	5.54 5 6/2
+94	139.66	134.34	5.32 5 3 3/8
+119	141.59	134.86	6.73 6 8 3/4
+143	143.14	135.38	7.76 7 9/8
+169	143.91	135.90	8.01 8 0 1/2
+194	144.72	136.41	8.31 8 3 3/4
+219	145.96	136.93	9.03 9 0 3/8
+243	146.72	137.45	9.27 9 3/4
+269	147.13	137.96	9.17 9 2
+294	147.34	138.48	8.86 8 10 3/8
+319	147.09	139.00	8.09 8 1 1/8
+343			

2.0689 1100

Total length of pipe 3+24

N.L.C. St. Mt.

P.T. - probably

Flush Tank in grade 10 ft below
S.L.B. St.

Flush Tank
S.L.C. St.

22nd St - S of C

Sta	Elev	Grade	cut-
0	137.24	132.40	4.84 4' 10 ¹ / ₂ "
+10	137.42	132.53	4.89 4' 10 ³ / ₄ "
+20	137.56	132.66	4.90 4' 10 ¹ / ₂ "
+30	138.26	132.77	5.47 5' 5 ¹ / ₂ "
+40	139.16	132.92	6.24 6' 2 ¹ / ₂ "
+50	139.56	133.05	6.51 6' 6 ¹ / ₂ "
+56	139.94	133.13	6.81 6' 9 ³ / ₄ "
+66	140.99	133.26	7.73 7' 8 ⁵ / ₈ "
+90	141.39	133.57	7.82 7' 9 ¹ / ₈ "
+115	140.08	133.90	6.18 6' 2 ¹ / ₈ "
+40	139.34	134.22	5.12 5' 1 ¹ / ₂ "
+63	139.52	134.55	4.97 4' 11 ¹ / ₂ "
+90	139.75	134.87	4.88 4' 10 ⁵ / ₈ "
+115	141.52	135.20	6.32 6' 3 ³ / ₄ "
+40	142.45	135.52	6.93 6' 11 ¹ / ₂ "
+65	143.75	135.85	7.90 7' 10 ¹ / ₂ "
+90	144.94	136.17	8.77 8' 9 ¹ / ₄ "
+115	144.39	136.50	7.89 7' 10 ³ / ₄ "
+40			
Total length of pipe			3+20

130101100

SIC M-Y

PT probably

Grade Taut. Grade 142.40 ✓
 N Line D 141.90

19th St - S of C
Sta Elev Grad Cur

0	61.62	56.50	5.12	5' 1/2"
+10	63.69	57.31	6.38	6' 4 3/8"
+20	64.98	58.13	6.85	6' 10 1/4"
+30	66.50	58.94	7.56	7' 6 3/4"
+40	68.30	59.76	8.54	8' 6 1/2"
+50	69.73	60.57	9.16	9' 2"
+56	70.62	61.06	9.56	9' 6 3/4"
+68	72.69	62.03	10.66	10' 8"
+93	75.96	64.07	11.89	11' 10 3/4"
+118	80.34	66.10	14.24	14' 2 7/8"
+143	83.07	68.14	14.93	14' 11 1/8"
+168	85.08	70.17	14.91	14' 10 7/8"
+193	87.38	72.21	15.17	15' 2"
+218	88.94	74.24	14.70	14' 8 3/8"
+243	89.66	76.28	13.38	13' 4 3/4"
+268	90.08	78.31	11.77	11' 9 1/4"
+293	91.06	80.35	10.71	10' 8 1/2"
+318	91.39	82.38	9.01	9' 0 1/2"
+343	91.14	84.50	6.64	6' 7 3/4"
Total length of pipe			3749	

8.1395 1.100

= PC

+142 S of C

PT

N I S of C Grade 89.50
Flush Tank. 89.00

17th ST NRC

Sta	Ch	Read	Cor
0	50.71	46.00	5.71 5' 8 1/2"
+9.6	50.93	45.28	5.65 5' 7 7/8"
+19.2	51.04	45.55	5.49 5' 5 7/8"
+29.9	51.43	45.83	5.60 5' 7 1/4"
+39.4	51.29	46.11	5.18 5' 2 1/8"
+65	51.44	46.87	4.57 4' 6 7/8"
+95	51.13	47.45	3.68 3' 8 7/8"
+120	51.37	48.17	3.20 3' 2 3/8"
+83	51.31	48.89	2.42 2' 5"
+60	51.41	49.62	1.79 1' 9 1/2"
-95	52.06	50.34	1.72 1' 8 7/8"
+101	52.20	51.06	1.14 1' 2 7/8"
+35	53.19	51.78	1.41 1' 4 7/8"
+60	55.74	52.50	3.24 3' 2 7/8" x
+95	60.22	57.80	5.42 5' 5"
+106	65.89	57.10	8.79 8' 9 1/2"
+35	67.70	59.40	8.30 8' 3 7/8"
+60	68.22	61.70	6.52 6' 6 1/4"
+95	69.24	64.00	5.24 5' 2 7/8" x
+105	70.28	64.50	5.78 5' 9 3/8"
+25	71.70	65.00	6.70 6' 8 3/8"

20/19733.2

20/1028

P.T.

N.L.C.

S.L.B. H- 70.50 ✓
Dusps 70.00

B.A.

17th North of C. St

Sta	Elev	Grade	cut	
4+45	74.00	65.50	8.50	8' 6"
+65	75.96	66.00	9.96	9' 7 1/2" x
+90	76.92	68.42	8.50	8' 6"
5+15	77.58	70.83	6.75	6' 9"
+40	78.67	73.25	5.42	5' 5"
+65	80.04	75.67	4.37	4' 8 1/2"
+90	81.82	78.08	3.74	3' 8 7/8"
6+15	85.58	80.50	5.08	5' 1"
+40	89.42	82.92	6.50	6' 6"
+65	91.25	85.33	5.92	5' 11"
+90	92.74	87.75	4.99	4' 11 1/8"
7+15	95.83	90.17	5.66	5' 8"
+40	98.98	92.58	6.40	6' 5 3/4"
+65	102.97	95.00	7.97	7' 11 1/8" x
Total length of pipe			7+70	

257100

341661100

W. Line C. St.

S. Line A. St. Flush Tank

21 St/₇ ST No of C

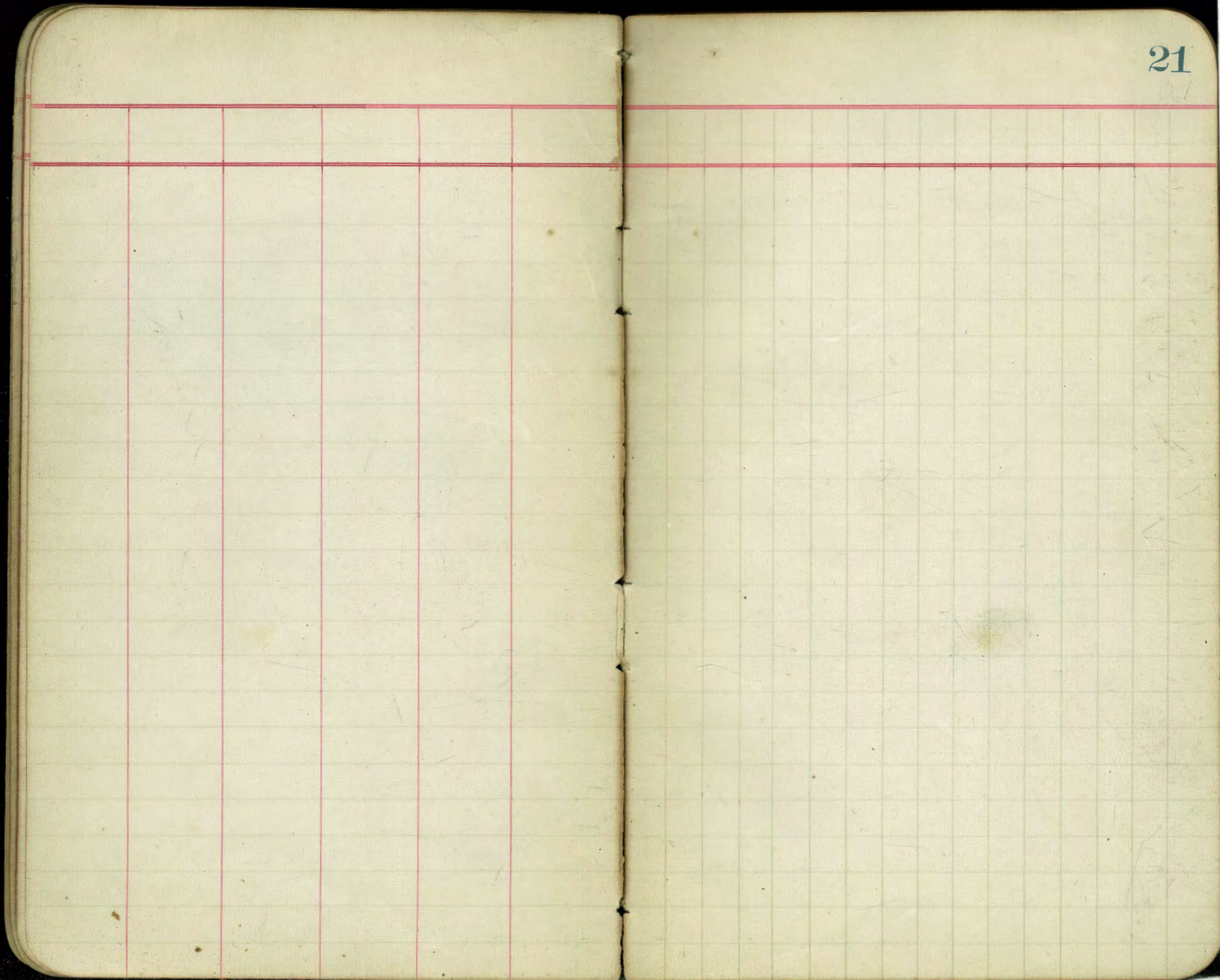
Sta	Elev	Grade	cm -	
0	113.28	102.40	10.88	10' 10 7/8
+10	113.35	102.92	10.43	10' 5 1/8
+20	112.96	103.45	9.51	9' 6 1/8
+30	113.31	103.97	9.34	9' 4 1/8
+40	113.92	104.49	9.43	9' 5 1/8
+50	114.51	105.02	9.49	9' 5 1/8
+55	114.82	105.28	9.54	9' 6 1/2
+68	115.56	105.96	9.60	9' 7 1/4
+93	116.89	107.27	9.62	9' 7 1/2
+118	117.90	108.57	9.33	9' 4
+43	118.93	109.88	9.05	9' 0 7/8
+64	119.52	111.19	8.33	8' 4
+93	120.04	112.50	7.54	7' 6 1/2 x
2+19	120.33	112.83	7.50	7' 6
+43	120.26	113.17	7.09	7' 1 1/8
+64	121.02	113.50	6.52	6' 6 1/2
+93	119.63	113.80	5.80	5' 9 1/8
3+15	119.42	114.17	5.25	5' 3
+43	122.55	114.50	8.05	8' 0 7/8
Total length of pipe			3748	

(Completed to 0+20 April 30/26)

0+42 N.I.C. Y

P.T

S I B Flush tank 119.50



21⁴ S of C

Sta	Elev	Grade	cut
0	113.17	102.70	10.47 10' 5 1/2"
+18	113.44	102.80	10.64 10' 7 3/4"
+19	113.63	102.89	10.74 10' 8 3/4"
+29	113.70	103.10	10.70 10' 8 3/4"
+39	113.64	103.10	10.54 10' 6 1/2"
+49	113.69	103.20	10.49 10' 5 3/4"
+55	113.71	103.26	10.45 10' 5 3/4"
+67	113.66	103.38	10.30 10' 3 3/4"
+92	113.56	103.64	9.92 9' 11"
1+17	113.76	103.89	9.87 9' 10 1/4"
+42	113.54	104.15	9.39 9' 4 3/4"
+67	113.03	104.40	8.93 8' 11"
+92	113.12	104.66	8.46 8' 5 1/2"
2+17	113.11	104.91	8.20 8' 2 1/4"
+112	113.16	105.17	7.99 7' 10 3/4"
+67	113.10	105.42	7.68 7' 8 1/4"
+92	113.04	105.68	7.36 7' 4 3/4"
3+17	113.12	105.93	7.19 7' 2 1/4"
+42	112.99	106.18	6.81 6' 9 3/4"
+62	113.13	106.39	6.74 6' 8 3/4"
+82	113.22	106.59	6.63 6' 7 3/4"

111.69 10.1

P.C. Y on C St - 22 ft ^{at 21⁴ S of C} West of center

0+42 S of C St - Y lateral

P.T.

N.L. S St - ^{disposition 111.6} grade 113.63 ✓

dump. 113.00

S St -

21st S of C M

Sta	Elev	Grade	Cur
4+02	113.20	106.80	6.40 6' 4 ⁷ / ₈
+22	113.09	107.00	6.09 6' 7 ¹ / ₈ x
+47	113.06	107.13	5.93 5' 11 ¹ / ₈
+72	113.30	107.26	6.04 6' 0 ¹ / ₂
+97	113.53	107.39	6.14 6' 1 ³ / ₄
5+22	113.74	107.53	6.21 6' 2 ¹ / ₂
+47	113.80	107.66	6.14 6' 1 ³ / ₄
+72	114.20	107.79	6.41 6' 4 ⁷ / ₈
+97	114.30	107.92	6.38 6' 4 ⁵ / ₈
6+22	114.73	108.05	6.68 6' 8 ¹ / ₈
+47	114.72	108.18	6.54 6' 6 ¹ / ₂
+72	114.98	108.32	6.66 6' 8
+97	115.35	108.45	6.90 6' 10 ¹ / ₈
7+22	115.36	108.58	6.78 6' 9 ³ / ₈
+42	115.37	108.68	6.69 6' 8 ¹ / ₄
+62	115.32	108.79	6.53 6' 6 ³ / ₈
+82	115.38	108.89	6.49 6' 5 ⁷ / ₈
8+02	115.41	109.00	6.41 6' 4 ⁷ / ₈ x
+27	115.73	109.32	6.41 6' 4 ⁷ / ₈
+52	116.01	109.64	6.37 6' 4 ¹ / ₂
+77	116.38	109.95	6.43 6' 5 ¹ / ₈

115263.100

S L S M-

19

N E S L - Grade 116.00 ✓
 Imp. 115.50

E S L

S L E S L

2 1/2^{mi} South of C

Sta	Elev	Grade	Cut
9+02	116.73	110.27	6.46 6' 5 1/2"
+27	116.96	110.59	6.37 6' 4 1/2"
+52	117.00	110.91	6.09 6' 1 1/2"
+77	117.40	111.213	6.17 6' 2"
10+02	117.61	111.54	6.07 6' 0 1/2"
+27	118.19	111.86	6.33 6' 4"
+52	118.72	112.18	6.52 6' 6 1/2"
+77	118.98	112.50	6.48 6' 5 1/2"
11+02	119.87	114.50	5.37 5' 4 1/2"
Total length of pipe			11+07

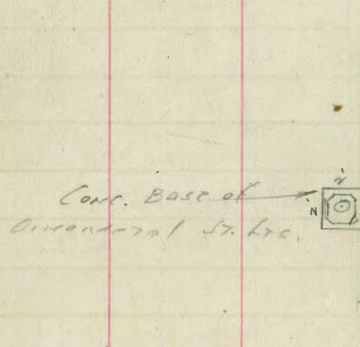
2011/2/21/07

(Completed Apr 30/88)
 K. L. F. Felsch, owner.

Indexed
LM

Ingraham St. Storm drain
Rosecrans wly

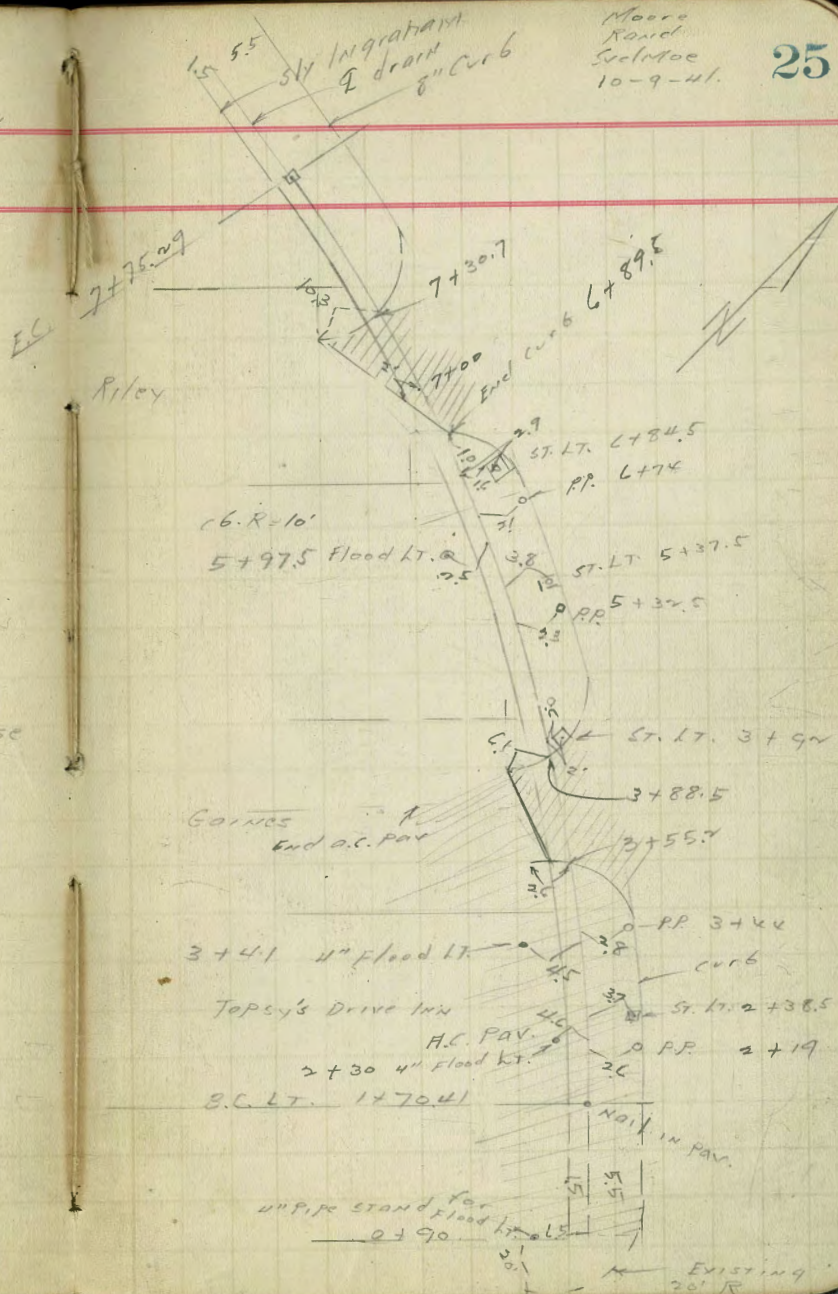
Note: affects to Poles to near side
" " St. Lts. " E of Base



$\Delta = 35^{\circ}51'30''$
 $R = 966.5$
 $T = 312.71$
 $L = 607.88$

Moore
Road
Sulphur
10-9-41.

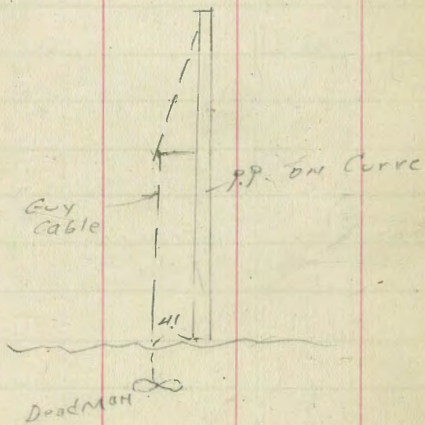
25



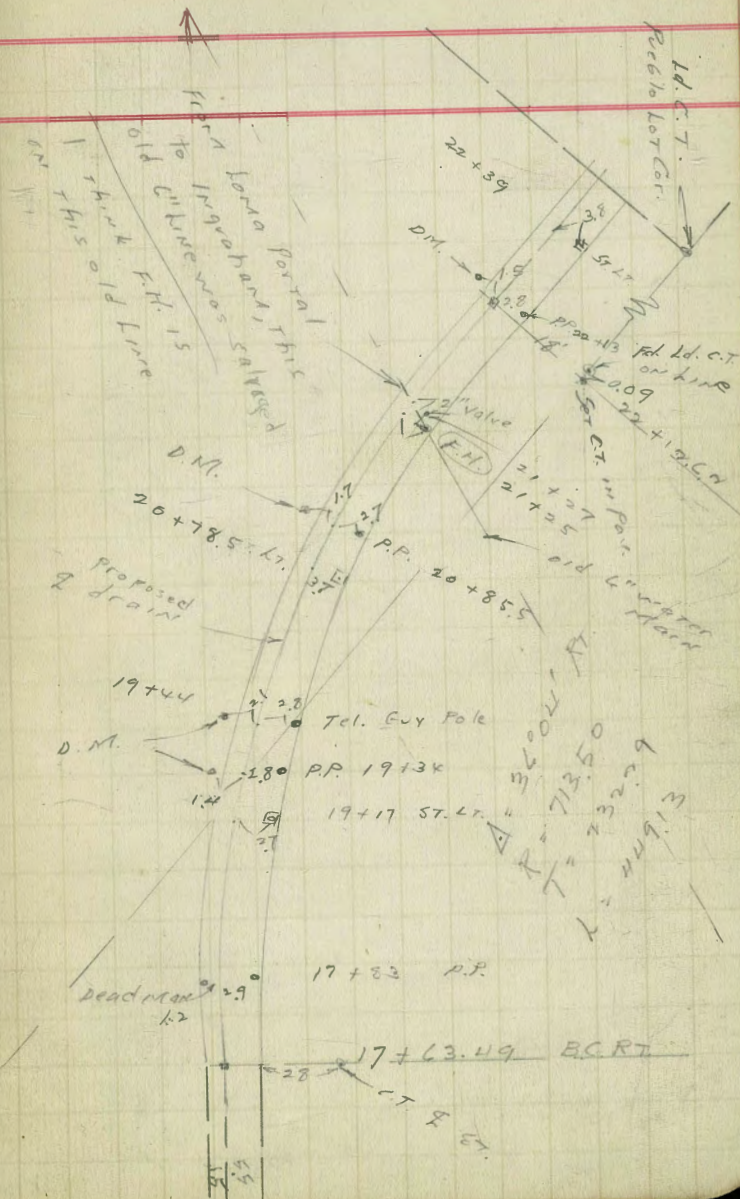
54 Ingraham
 9" drain
 8" curb

	38	17458.5	ST. LT.
Foster & Kleiser SIGN	33	17445.5	
	38	16401	ST. LT.
	31	15483	P.P.
	27	14448.5	ST. LT.
	24	14445	P.P.
	24	13465.5	P.P.
	38	12495	ST. LT.
	30	12428.5	P.P.
Sunset oil Co. sign	5.5	12402	
	36	11440.5	ST. LT.
	30	11479	P.P.
	24	10403.5	P.P.
	36	9486.5	ST. LT.
	34	8474	P.P.
	38	8432	ST. LT.
15	55		

Ingraham St.
Proposed drain



22+14.67
17+63.49
449.13



From Iowa Portal
to Ingraham, this
old line was
replaced
I think
this
old line

$\Delta R = 3600'$
 $T = 713.50'$
 $L = 232.5'$
align
with

Levels on Ingraham drain

Rosecrans Wly

0+76 gwt. pav

0+40 2 Rosecrans

0+30 Int of 16" water. Top pav

0+05.6 gutter pav

0+05.0 Top of Return

0+00 = Junction Box = 29 + 72.5 = Drain

SWBP 5.14 5.67
5.91 6.44

54" Rosecrans
0.53 Rosecrans
Ingraham

LT

♀

5.5 RT = 06 28

gwt.

5.73 -04
5.49
~~0.95 - 21~~

5.73
5.00
~~0.74~~ 0.44

5.79
5.04
~~1.40~~ 0.38

5.84
5.58
~~0.86~~ 0.17

5.76
5.01
~~1.93~~ 0.41

5.72
5.9
0.5 ✓

5.67
6.44

Errors made on Plus Rod
and 0 to 0 Rod

2 + 41. beg. of cb. drive #2

2 + 19 west end cb drive

1 in drive

1 + 70.41 BC LT. in drive

1 + 50 in drive

0 + 90 oil pay also beg. cb. drive in

0 + 76 Top Ex. cb. Rot

5.67
6.44

LT

2

cb

29

947

0.6	0.70	0.16
46	473	489
48	471	507
51	497	551

0.57	0.69	0.14
5.10	4.71	4.85
4.87	4.73	5.09
	4.98	5.53

5.24	1.97	0.51
4.97		

5.17	1.50	0.50
4.94		

5.1	1.66	0.6
4.8		

0.3		
5.0	1.56	0.97
4.7	4.78	5.47
	6.5	9.5

5.10	1.67	0.57
4.83		

5.67		
6.44		
<u> </u>		

3 + 88.5 Top cb. West side Gaines

3 + 88.5 gut Pav

3 + 55.0 gut Pav.

3 + 55.0 Top cb Return East side Gaines

3 + 41 end cb drive

3 + 01 beg. cb drive #3

1 + 83 end cb drive

2 + 50

5.67
6.44

LT

\$

30

5.67
4.98
0.69 = True

1.71 = Error
0.69
1.02

1.71
1.0
0.71 = True

4.98 ^{0.69}
4.73 ^{1.21}

5.30 ^{1.24}
5.55 ^{0.17}

5.17 ^{1.27}
5.41 ^{0.24}

4.45 ^{1.29}
4.90 ^{0.71}

4.75 ^{0.71}
4.96 ^{0.80}

4.66 ^{0.71}
4.90 ^{0.86}

4.75 ^{0.64}
5.03 ^{0.73}

5.17 ^{0.40}
5.07 ^{1.22}

5.67
6.44

cb gut

0.80
1.81
5.78
5.47

0.71
4.80
5.20
5.43

0.73
4.75
5.00
5.46

5+81 end cb drive

5+46 beg. cb drive

5+21 end cb drive

5

4+77 beg. drive

4+46 end cb drive

4+21 beg. of cb drive

5.67
time

L7

L

cb.

31
907.

1.9
4.5 2.11
4.33 1.52
4.94

1.8
4.6 2.07
4.37 1.51
4.93

1.8
4.6 2.02
4.82 1.47
4.97

1.7
4.7

1.7
4.7 1.98
4.42 1.40
5.04

1.5
4.9 1.92
4.50 1.39
5.05

1.8
4.1 1.81
4.63 1.28
5.16

5.67

~~6.24~~

3

from here on subtract 1.0
from entire E1.

7+30.7

gut. pay

west side
Riley

7+00

pay,

6+89.5

gut pay.

6+89.5

TOP CB RETURN

east side
Riley

6+53

end cb drive

6+13

beg. cb drive

6+00

5.67
~~4.44~~

LT

\$

RT

32

cb.

9.7

Deduct 10

1.50

4.94

1.67

4.77

1.50

4.88
1.0

2.18

4.06
1.0

1.8

4.6

2.19

4.25

1.59

4.85

1.9

4.5

2.06

4.38

1.55

4.29

1.8

4.5

5.67
~~4.44~~

L7

A

06

33
947

Aror

Deduct 10

9 + 50

9

+ 50

8

7 + 50

J.P. 4.74 7.03 4.15 4.79

7 + 30.7 = Top 06. Ret

6.44

2.6
4.4

0.9	1.5	2.5	2.88	1.78
6.4	5.5	4.5	4.59	5.25
50	5			

2.8
4.6

1.0	1.2	2.3	2.32	1.70
6.0	5.8	4.7	4.71	5.32
50	5			

2.1
4.9

7.03 ✓
9

2.06
4.38

6.44
9

LT

L

06

34

17

~~30~~

2.82

2.13

4.0

4.214.90

11 + 70

end. cb drive

27

2.79

2.12

4.3

4.244.91

Error

Deduct 1.0

11 + 41

beg. cb drive

2.6

2.71

2.07

4.4

4.324.96

11 + 79

end cb drive

2.4

2.70

2.08

4.6

4.334.95

10 + 90

beg. cb. drive

2.4

2.63

2.02

4.6

4.405.01

150

2.5

4.5

10 + 100

2.4

2.49

1.94

4.6

4.545.09

7.03

7.03

2

14 + 41

14

13 + 71 beg. ob. drive

+ 50

13

12 + 70 end of drive

T.P. 3.64 6.76 3.91 3.10

12 + 30 beg. ob. drive

7.03

LT

30 2.96 2.35
3.80 4.41

2.9
3.9

2.8 2.95 2.82
4.0 3.81 4.43

3.0
3.8

3.1 2.91 2.27
3.7 3.85 4.49

3.2 2.89 2.21
3.4 3.87 4.55

6.76 ✓

2.93 2.88 2.21
4.1 4.15 4.82

7.03 ✓

35

g.u.t.

2.35

4.41

3.81

4.43

3.85

4.49

4.55

4.15

4.82

Error -
Deduct 1.1

LT

2

RT

36

cl 90T

17

+50

16 end cb drive

15+84.5 beg. cb drive

15+53 End cb drive

15

14+74 beg. cb drive

676

117	2.0
<u>5.1</u>	<u>4.8</u>
50	5

3.7	3.37	2.65
3.1	<u>3.39</u>	<u>4.11</u>

Error.
Deduct 10

3.3
3.5

3.1	3.26	2.60
3.7	<u>3.50</u>	<u>4.16</u>

3.1	3.19	2.55
3.7	<u>3.57</u>	<u>4.21</u>

2.9	3.12	2.27
3.9	<u>3.62</u>	<u>4.79</u>

2.6

2.7	3.02	2.20
4.1	<u>3.72</u>	<u>4.36</u>

676
3

19 + 50

19

18 + 50

18

T.P. 439 7.8 ✓ 333 343

17 + 63.49 BC RT.

17 + 50

676

LT

R

RT

37

6 907

Error. Deduct 10

10
6.8
50

2.2
5.6
5

3.5
4.3

3.7
4.1

3.55
4.27

2.95
4.87

3.5

4.3

1.2

1.8

3.5

3.49

2.91

6.4

6.0

4.3

4.33

4.91

50

5

2.8 ✓

3.5

3.43

2.82

3.33

3.94

3.7

3.1

6.76

Note! front Ganges wly
 cb. drive in's are not
 paved, only curb is
 broken out.

Jim Reading might be interested
 in these cb. drive widths.

44 + 14.62 = 58.62

nd

+ 50

71 + 75

nd

+ 50

70

7.84

LT

¢

38

cb got

Please check this to Profile.
 No B.M. short of 01A. 403
 and now 4:40 PM

2.2	2.7	40	3.79	3.12
5.6	5.1	3.8	4.03	4.68
50	5			

Error -

Deduct 1.0

3.8 4.0

3.9 3.9

0.36

7.46 = Top of "C.I. Main" WATER

1.8	2.3	3.9	3.55	2.99
6.0	5.5	3.9	4.17	4.83
50	5			

4.1 3.7

1.6	2.5	3.6	3.56	2.97
6.4	5.3	4.7	4.26	4.85
50	5			

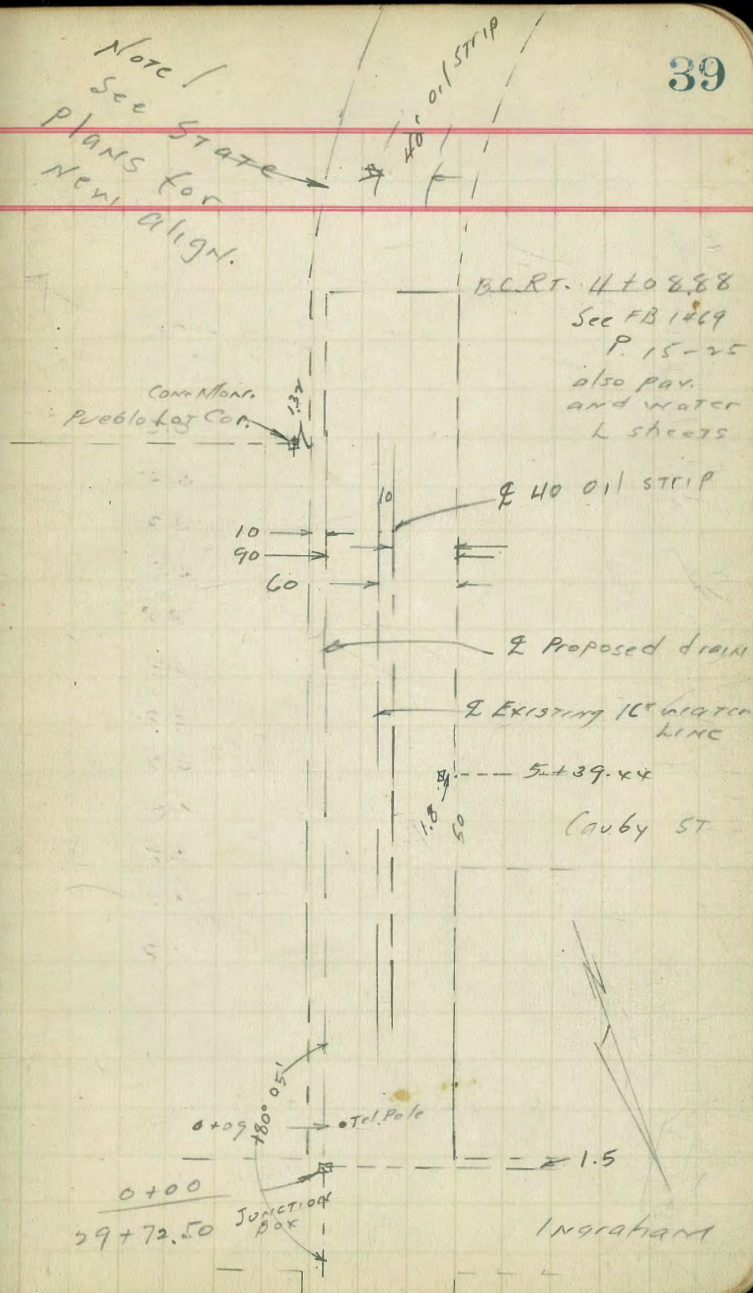
7.84

Moore 10-11-41.
 Rand
 Suelmo

Rosecrans proposed drain
 Ingraham St

SWAP	4.17	4.70 ✓	Rosecrans Ingraham 0.53
0+00		4.2	0.5
0+50		4.2	0.5
1		4.7	0.0
+50		3.4	1.3
4		4.4	0.3
+50		4.5	0.2
3		4.5	0.2
+50		4.7	0.0
4		4.7	0.0
+50		4.1	0.6
5		4.6	0.1
+50		4.3	0.7
6		4.9	-0.2
T.P.	7.15	7.67 ✓	4.19 0.51
+50		8.0	-0.3
7		7.5	0.2

Note!
 See State
 Plans for
 New align.



		7.67 ✓	
7+50		7.6	0.1
8		8.1	-0.8
+50		8.3	-0.6
+64		8.3	-0.6
+70	Top New fill	4.5	3.2
9	by U.S. Housing	4.3	3.9
+50		4.6	3.1
10		4.6	3.1
+50		4.5	3.2
11		4.3	3.9
11 + 08.88	B.L. RT. of	4.3	3.9
"	40' RT.	5.38	2.39
"	60' RT.	6.0	1.7
"	66' RT.	8.7	-1.0
"	90' RT.	9.0	-1.3

oil pav. + 16" water line

2 oil Pav

Shoulder of fill on west

Toe of fill

W.L. Rosecrans = Bottom dry Lake

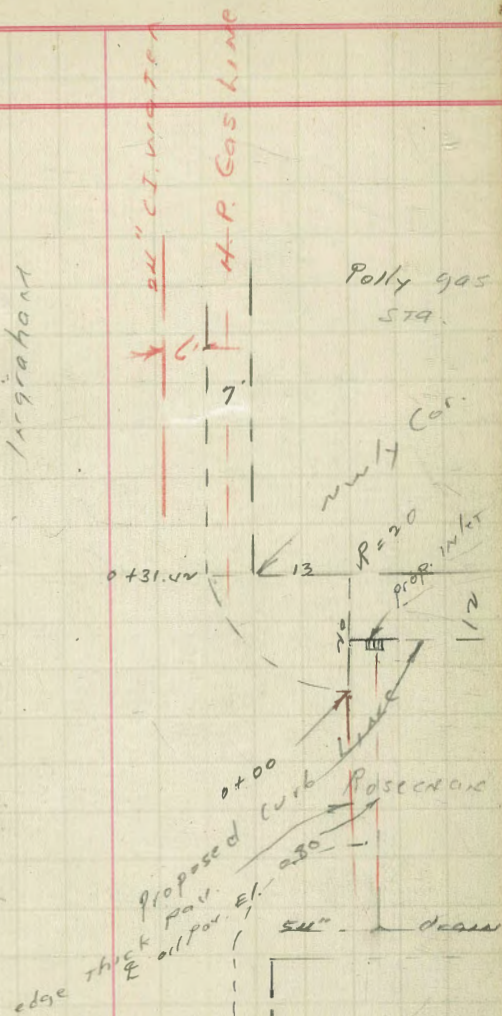
Moore 10-11-41

Levels on Existing Newly Curb
Return of Ingraham & Rosecrans

B.M.		4.83	5.36		0.53
0+0	Top Ex. cb		4.90	0.46	
"	gut. pav		5.21	0.15	
0+15.7	cb		4.80	0.56	
"	gut "		5.44	-0.08	
0+31.44	E.C. Top cb.		4.81	0.55	
"	gut pav		5.37	-0.01	
0+66.4	cb		4.77	0.59	
"	pav gut		5.37	-0.01	
1+14.4	cb		4.73	0.63	
"	pav gut		5.34	0.09	
1+45.4	cb		4.75	0.61	
"	pav gut		5.31	0.05	

Beg. curb out
= CURB OUT
DRIVE
= END CURB OUT

Beg. cb out
↑
drive
↓
End. cb out



H. D. by RETURN

Ingraham & Rosecrans

5.36

0 + 0 = H. Ingraham Elev.

T. P. Ex. cb 4.84 0.52

9UT 5.36 .60

0 + 15.7

cb 4.86 0.50

9UT 5.47 - 0.11

0 + 31.4

cb 4.90 0.96

9UT 5.47 - 0.11

1 + 31.4

9UT 5.40 - 0.02

2 + 31.4

9UT 5.30 0.06

Towards Marine
Base

The image shows an open notebook with two pages. The pages are cream-colored and feature light blue horizontal ruling. The left page is divided into six vertical columns by red lines. The right page is divided into two vertical columns by a single red line. The number '43' is printed in the top right corner of the right page. The notebook is bound in the center, and the pages are slightly aged.

The image shows an open notebook with two blank pages. The pages are cream-colored and feature light blue horizontal ruling. The right page is numbered '46' in the top right corner. The notebook is bound in the center, and the pages are slightly aged. The notebook is placed on a white surface against a dark background.

The image shows an open notebook with two pages. The pages are cream-colored and feature light blue horizontal ruling. The left page is divided into columns by vertical red lines, with a margin on the left. The right page has a single vertical red line on the left side, creating a margin. The number '49' is printed in the top right corner of the right page. The notebook is placed on a white surface against a dark background.

Gould & Hutton
 350 pages Cap. \$3.50
 40
 1.6

7.67 = π 7.67 7.67
 914 7.67 612
 - 1.45 0.00 13.79 = 0.585

5.45

5.40

5.30

7.67
 9.01
 16.68

TRAVERSE TABLE FOR TRANSIT BOOK,
 From 1° to 90° for a distance of 100.

Degrees.	DEGREES.		¼ DEGREE.		½ DEGREE.		¾ DEGREE.		Degrees.
	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	
0			100.00	0.44	100.00	0.87	99.99	1.31	80
1	99.98	1.75	99.98	2.18	99.97	2.62	99.95	3.05	81
2	99.94	3.49	99.92	3.93	99.91	4.36	99.88	4.80	82
3	99.86	5.23	99.84	5.67	99.81	6.10	99.79	6.54	83
4	99.76	6.98	99.73	7.41	99.69	7.85	99.66	8.28	84
5	99.63	8.72	99.58	9.15	99.54	9.58	99.50	10.02	85
6	99.45	10.45	99.41	10.89	99.36	11.32	99.31	11.75	86
7	99.25	12.19	99.20	12.62	99.14	13.05	99.09	13.49	87
8	99.03	13.92	98.97	14.35	98.90	14.78	98.84	15.21	88
9	98.77	15.64	98.70	16.07	98.63	16.50	98.56	16.93	89
10	98.48	17.36	98.40	17.79	98.33	18.22	98.25	18.65	90
11	98.16	19.08	98.08	19.51	97.99	19.94	97.90	20.36	71
12	97.81	20.79	97.72	21.22	97.63	21.64	97.53	22.07	72
13	97.44	22.50	97.34	22.92	97.24	23.34	97.13	23.77	73
14	97.05	24.19	96.92	24.62	96.81	25.04	96.70	25.46	74
15	96.59	25.88	96.48	26.30	96.36	26.72	96.25	27.14	75
16	96.13	27.56	96.00	27.98	95.88	28.40	95.76	28.82	76
17	95.63	29.24	95.50	29.65	95.37	30.07	95.24	30.49	77
18	95.11	30.90	94.97	31.32	94.83	31.73	94.69	32.14	78
19	94.55	32.56	94.41	32.97	94.26	33.38	94.12	33.79	79
20	93.97	34.20	93.82	34.61	93.67	35.02	93.51	35.43	80
21	93.36	35.81	93.20	36.24	93.04	36.65	92.88	37.06	61
22	92.72	37.46	92.55	37.86	92.39	38.27	92.22	38.67	62
23	92.05	39.07	91.88	39.47	91.71	39.87	91.53	40.27	63
24	91.35	40.67	91.18	41.07	91.00	41.47	90.81	41.87	64
25	90.63	42.26	90.45	42.66	90.26	43.05	90.07	43.44	65
26	89.88	43.84	89.69	44.23	89.49	44.62	89.30	45.01	66
27	89.10	45.40	88.90	45.79	88.70	46.17	88.50	46.56	67
28	88.29	46.95	88.09	47.43	87.88	47.72	87.67	48.10	68
29	87.46	48.48	87.25	48.86	87.04	49.24	86.82	49.62	69
30	86.60	50.00	86.38	50.38	86.16	50.75	85.94	51.13	70
31	85.72	51.50	85.49	51.88	85.26	52.25	85.04	52.62	51
32	84.80	52.99	84.57	53.36	84.34	53.73	84.10	54.10	52
33	83.87	54.46	83.63	54.83	83.39	55.19	83.15	55.56	53
34	82.90	55.92	82.66	56.28	82.41	56.64	82.16	57.00	54
35	81.92	57.36	81.66	57.71	81.41	58.07	81.16	58.42	55
36	80.90	58.78	80.64	59.13	80.39	59.48	80.13	59.83	56
37	79.86	60.18	79.60	60.53	79.34	60.88	79.07	61.22	57
38	78.80	61.57	78.53	61.91	78.26	62.25	77.99	62.59	58
39	77.71	62.93	77.44	63.27	77.16	63.61	76.88	63.94	59
40	76.60	64.28	76.32	64.61	76.04	64.94	75.76	65.28	60
41	75.47	65.61	75.18	65.93	74.90	66.26	74.61	66.59	41
42	74.31	66.91	74.02	67.24	73.73	67.56	73.43	67.88	42
43	73.14	68.20	72.84	68.52	72.54	68.84	72.24	69.15	43
44	71.93	69.47	71.63	69.78	71.33	70.09	71.02	70.40	44
45	70.71	70.71							45
Degrees.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Degrees.
	DEGREES.		¼ DEGREE.		½ DEGREE.		¾ DEGREE.		