

GRADE

158

Alma Sawyer

PASTS

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Index.

0 1

- Pages 3-8 Main Interceptor Pump House East End of
 Carlton to D. End. North of Yonge. [#]Note from &
 Macaulay & Rosecrans the Interceptor along Rosecrans is
 2' Note. Because of m. flat grade several hundred feet
 of the Main Interceptor is m. covered & possibly voiding
 10' part of these notes
- Pages 9-14 Main Interceptor from Westerly Line Rosecrans St. up
 McCauley St - Wabaska St - Zidal St and connect
 to Existing sewer - East Line Catalina Blvd.
- Page 15 Capistrano St. MH #35 to MH #195 & Quimby & Capistrano
- " 16 Quimby St. MH #195 to D.E. - West of Willow.
 Across Blk 150 - Lots 2-9 Roseville from MH 169 & Quimby to
- " 18 MH #71 & Russell and E. on Russell 154' to D.E.
 MH #22 - Main Interceptor across Lot 20 Pluma Lots
- " 19 84' C.I. Pipe 23' Con. Pipe to MH #164 & Pie & Pueblo Lot Line
 MH 164 to D.E. - East of Capistrano.
- " 20 Pie St. and SE. to D.E. West of Willow
- " 22 Elephant St. - MH #21 (Main Interceptor) to D.E. West of Tustin.
- " 23 Tustin St. MH #159 - South to D.E.
- " 24 Alley - MH 159 - " to D.E.
- " 25 Newell St. MH #19 (Main Interceptor) to D.E. West of Plum.
- " 26 Across Lots 586 - MH #24 to D.E. West of Wexon.
- " 27 McCauley St. - MH #17 to D.E. West of Plum.
- " 28 Yonge St. - MH #61 Rosecrans St to E Line Willow.
- " 30 Voltaire St. - MH #60 - " St. to E. " "

Bill Bliss
 Joe Duenmit
 J. Jacobszoon Tank
 P. Kiernan
 June 6, 1929
 871 N.W. 8th
 Carlton Reservoir

Main Interceptor from Settling
 to 25 east of fange
 HZ Elev Elev Flow
 Line Grade Cuts

0.81	15.34		14.53			
2.71	8.51	9.54	5.80			
5.78 M. Riv. No Hole		9.26	-0.75		-7.00	
0.00						
4.9125						
#1		7.37	1.14	-6.93	8.07	
#2		7.01	1.50	-6.86	8.36	
#3		6.51	2.00	-6.79	8.79	
#4 #1		6.02	2.49	-6.72	9.21	
4.4750						
#1		5.20	3.31	-6.65	9.96	
#2		4.30	4.21	-6.58	10.79	
#3		3.52	4.99	-6.51	11.50	
#4 #2		2.97	5.54	-6.43	11.97	
6.46.01						
#1		3.07	5.44	-6.36	11.50	
#2		3.44	5.07	-6.29	11.36	
#3		3.79	4.72	-6.22	10.94	
#4	2.83	7.08	4.26	4.25	-6.15	10.90
#5		3.29	3.79	-6.08	9.87	
0. M. Hole Tied East				-2.00	7.88	
#6 #3		4.20	2.88	-6.02	8.90	
6-45						
#1		4.26	2.82	-5.95	8.77	
#2		4.56	2.52	-5.88	8.40	
#3		4.94	2.14	-5.81	7.95	
#4		5.64	1.44	-5.74	7.18	
#5		6.35	0.73	-5.67	6.40	
M. Hole Tied to 20 East						
#6 #4		7.19	-0.11	-5.61	5.50	
6-45						
#1		7.28	-0.20	-5.54	5.34	
#2	3.69	2.77	8.00	-0.92	-5.47	4.55

Continued on Page 24 Box K
 Restaked from MH #2
 to MH #3

Void Restaked Box #2

Void

	HZ		Elev Stake	Elev from Line Grade	cuts	
	2.77					
#3		4.20	-1.43	-5.40	3.97	
#4		4.47	-1.70	-5.33	3.63	
#5		4.25	-1.48	-5.27	3.79	
#5 Min. Hole						
#6 S. Tendon 25° 50' 00" L		4.99	-2.22	-5.21	2.99	
6-50						
#1		4.61	-1.84	-5.14	3.30	
#2		4.94	-2.17	-5.07	2.90	
#3		4.71	-1.94	-5.00	3.06	
#4	4.47	2.96	4.28	-1.51	-4.93	3.42
#5			4.28	-1.32	-4.86	3.54
Δ 46° 15' 35" R						
#6 Min. Hole #6 Note # 2 Piers Beginning		4.60	-1.64	-4.78	3.14	
6-48.01						
#1		4.51	-1.55	-4.71	3.16	
#2		5.67	-2.71	-4.64	1.93	
#3		5.76	-2.80	-4.57	1.77	
#4		5.94	-2.98	-4.50	1.52	
#5		5.99	-3.03	-4.43	1.40	
Min. Hole #7						
#6 14° 02' 00" L		5.04	-2.08	-4.37	2.29	
6-45.26						
#1		4.77	-1.81	-4.31	2.50	
#2	6.70	4.53	5.13	-2.17	-4.25	2.08
#3			6.40	-1.93	-4.19	2.26
#4			6.12	-1.59	-4.13	2.54
#5			5.83	-1.30	-4.06	2.76
#6						
#6 6° 23' 00" L		5.03	-0.50	-3.99	3.49	
6-45						
#1		4.93	-0.40	-3.92	3.52	
#2		4.85	-0.32	-3.86	3.54	
#3		4.77	-0.24	-3.79	3.55	
#4		4.56	-0.03	-3.72	3.67	

Vold.
 Restaked
 Restaked from MH #2 to MH #13

	+	H.Z.	-	Elev Stake	Elev flow line Grade	cuts
#5		453	4.20	+ 0.33	- 3.65	3.98
#6			4.06	+ 0.47	- 3.59	4.06
6-45			4.33	+ 0.20	- 3.5	3.7
#1						
#2	6.13	5.79	4.87	- 0.34	- 3.45	3.11
#3			6.23	- 0.44	- 3.38	2.94
#4			6.19	- 0.40	- 3.31	2.91
#5			6.05	- 0.26	- 3.24	2.98
#6 #10			5.82	- 0.03	- 3.18	3.15
6-45						
#1			5.42	+ 0.37	- 3.11	3.48
#2			4.98	+ 0.81	- 3.05	3.86
#3			5.12	+ 0.67	- 2.98	3.65
#4			5.24	+ 0.55	- 2.91	3.46
#5			5.02	+ 0.77	- 2.84	3.61
#6 #11			4.72	+ 1.07	- 2.78	3.85
4-51.82			4.25	1.34	- 2.65	4.19
#1						
#2			3.14	2.65	- 2.53	5.18
#3	9.91	13.80	1.90	3.89	- 2.40	6.29
#4 #12			8.47	5.33	- 2.28	7.61
4-51.25			7.65	6.15	- 2.15	8.30
#1						
#2			6.37	7.43	- 2.03	9.46
#3			5.50	8.30	- 1.90	10.20
#4			6.01	7.79	- 1.78	9.57
6-45						
#1			5.33	8.47	- 1.67	10.14
#2			4.97	8.83	- 1.56	10.39
#3			4.61	9.19	- 1.46	10.65
#4			4.31	9.49	- 1.35	10.84

Vold
 Restaked
 Brok #2

50' sewer
 5' sewer

5' sewer

Mn. Hole A 90° 00' 00"
 L

Drop # Mn. Hole B R. 90° 00' 00"
 #13 6' low wall 20' 0" 11' Line of stations

		HI 1380		Elev Sore	Elev flow line Grade	cuts
#5			3.98	9.82	-1.24	11.06
	#14 & McCouley				+4.00	6.06
#6	leaves Main Interceptor		3.74	10.06	-1.13	9.19
6-95						
#1			3.93	9.87	-1.02	10.89
#2	2.39	11.70	4.49	9.31	-0.91	10.22
#3			2.75	8.95	-0.81	9.76
#4			3.08	8.62	-0.70	9.32
#5			3.41	8.29	-0.59	8.88
	Mn Hole				+2.00	5.88
#6	#50 & Newell		3.84	7.86	-0.48	8.34
6-95						
#1			4.50	7.20	-0.37	7.57
#2			4.89	6.81	-0.26	7.07
#3			5.19	6.51	-0.16	6.67
#4			5.50	6.20	-0.05	6.25
#5			5.82	5.88	+0.06	5.82
	Mn Hole #51					
#6	& Alphant		6.07	5.63	+0.17	5.46
6-95						
#1	5.80	11.15	6.35	5.35	+0.28	5.07
#2			6.00	5.15	+0.39	4.76
#3			6.16	4.99	+0.49	4.50
#4			6.26	4.89	+0.60	4.29
#5			6.43	4.72	+0.71	4.01
	Mn Hole 4.90:00:00L					
#6	#52 & Poe		6.61	4.54	+0.82	3.72
2-97-25						
#1			4.68	6.47	-0.99	5.48
	Mn Hole Δ 30:00:00R					
#2	#53 Tied South 0.920°		3.89	7.26	-1.16	6.10
6-95						
#1			3.15	8.00	-1.32	6.68
#2			2.76	8.39	-1.48	6.91
#3			2.09	9.06	-1.64	7.42
7.P.	956	1899	2.22	8.93		
#4			8.88	9.61	-1.80	7.81

	H.Z.		Elev. static	Elev. flow	cut	
	18:49		Line			
#5			8.25	10.24	-1.96	8.28
Drop Man Hole					4.50	6.74
#6 #54	W. Gumbly		7.25	11.24	-2.13	9.11
6-45						
#1			6.20	12.29	-2.29	10.00
#2			5.31	13.13	-2.45	10.73
#3			4.88	13.61	-2.61	11.00
#4			3.92	15.07	-2.77	12.30
#5			3.65	14.84	-2.93	11.91
Drop Man Hole					7.00	6.50
#6 #55	E. Russell		4.99	13.50	-3.10	10.40
6-45						
#1			4.54	13.95	-3.26	10.69
#2	2.11	15.44	5.16	13.33	-3.42	9.91
#3			2.33	13.11	-3.58	9.53
#4	in yard		3.50	11.94	-3.74	8.20
#5			4.34	11.10	-3.90	7.20
Man Hole					4.07	
#6 #56	E. Stone					
6-45						
#1			5.05	10.39	-4.23	6.16
#2			5.10	10.34	-4.39	5.95
#3			4.83	10.61	-4.55	6.06
#4	10.99	22.35	9.08	11.36	-4.71	6.65
#5			9.40	12.95	-4.87	8.08
Man Hole						
#6 #57	E. Terry S. Ort			15.03	-5.04	9.99
6-45						
#1			6.51	15.84	-5.20	10.69
#2			6.04	16.31	-5.36	10.95
#3			4.93	17.42	-5.52	11.90
#4			3.28	19.07	-5.68	13.39
#5	3.11	23.63	1.83	20.52	-5.84	14.68
Drop #58	96°00-00 R				15.00	7.82
#6 E	Udo 10'120		0.81	22.82	-6.01	16.81
	X cut in pump					

	H.Z. 23.63		Elev Stake	Elev flow line	Cuts
2-97.75					
#1			7.31	16.32	6.01
#2			12.95	11.18	6.35
#1			11.44	12.19	6.51
#2	5.18	17.93	10.88	12.75	6.67
#3			7.66	13.27	6.83
#4			5.00	12.93	6.99
#5			5.23	12.70	7.15
#6			5.41	12.52	7.32
#1			5.80	12.13	7.51
#2			6.04	11.89	7.70
#3			6.26	11.67	7.89
#4			6.53	11.90	8.07
#1			5.28	12.65	9.13
#2	11.65	25.14	4.44	13.49	9.74
#3			10.41	14.73	10.35
#4			9.17	15.97	10.96
#5			7.92	17.22	11.58
#6			5.99	19.15	12.56
#1			5.04	20.10	13.22
#2			4.12	21.02	13.88
#3			3.16	21.98	14.54
#4			2.24	22.90	15.20
#5			1.82	23.32	15.85
#1			1.5	23.62	16.51
#2			1.12	24.02	17.18
#3			7.10		

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Main Interceptor from the No. 7 hole line
of Parsons up McCauley to Wabaska then to Catalina
Construction 42 - Elevation Elevation flow
Line Grade

9

BM 8.90 18.96 10.06 Cuts Tie out MH # 14 See page 6

44.75
34.80
9.95

BM						
	Mn Hole #14 McCauley	8.90	10.06	4.00	6.07	
0700		81				
7.50.29		8.60	10.15	5.12	5.02	
#1		23	11.73			
#2		7.02	11.72	6.24	5.48	
		6.12	12.34			
#3	Set West	5.96	12.78	7.36	5.49	
	Set East	4.79				
#4		4.57	14.17	8.47	5.70	
		3.70	.26			
#5		2.96	15.78	9.59	5.67	
#6		2.89	16.07	10.71	5.86	
	Mn Hole #15 Lobust 9.6.6	27.78	0.84	18.12	11.82	6.30
5.50.50						
#1		6.89	20.89	13.22	7.67	
#2		5.92	21.86	14.61	7.25	
#3		4.86	22.92	16.01	6.91	
#4		4.10	23.68	17.40	6.28	
	Mn Hole #16 10.6.2	35.84	2.56	25.22	18.80	6.42
5.50.50						
#1		8.80	27.04	20.23	6.81	
#2		7.72	28.12	21.66	6.46	
#3		5.92	29.92	23.09	6.83	
#4		4.89	30.95	24.53	6.42	
	Mn Hole #17 Δ 21° 48' 00" R	6.20	29.64	25.96	3.68	
4-51.27						
#1		3.33	32.51	27.45	5.06	
#2	9.97	4.77	1.04	34.80	28.93	5.87
#3		8.20	36.57	30.42	6.15	
	Mn Hole Δ 18° 16' 00" R	7.78	36.99	31.91	5.08	
#4 #18						
6-99.97		6.30	38.47	32.91	5.56	
#1						

	+	HZ	-	Elev stake	Elev flow line	
2997 150 52.47		44.77				
#2			5.71	39.06	33.91	5.15
#3			4.24	40.53	34.91	5.62
#4			3.99	40.78	35.90	4.88
#5	52.97		2.77	42.00	36.90	5.10
#6	Mn Hole Pans above 150.02	52.44	1.61	43.16	37.90	5.26
#1	Woods to Drive or R.R. K. of Way		8.56	43.88	38.90	4.98
#1			7.45	44.99	39.97	5.02
#2			6.35	46.09	41.04	5.05
#3	Mn Hole		4.94	47.50	42.11	5.39
#4	9-52.52		3.93	48.51	42.74	5.77
#1			2.94	49.50	43.37	6.13
#3			1.89	50.55	44.80	6.55
#4	Mn Hole $\Delta 90^{\circ}04'00''$ L for 65m		1.46	50.98	44.63	6.35
#1	4-90.25	8.04	7.60	51.42	45.12	6.30
#2			6.83	52.19	45.61	6.58
#3			6.30	52.72	46.10	6.62
#4	Mn Hole $\Delta 102^{\circ}05'00''$ L		5.91	53.11	46.59	6.52
#1	6-96.42		5.30	53.72	47.56	6.16
#2			5.09	53.93	48.54	5.39
#3			4.70	54.32	49.51	4.81
#4			3.91	55.11	50.49	4.62
#5			2.96	56.06	51.47	4.59
#6	Mn Hole #23 $\Delta 1^{\circ}05'00''$ L		3.36	55.66	52.45	3.21
#1	6-96.42	11.05	0.51	58.51	53.43	5.08
#2			9.99	59.57	54.40	5.17

	H.I.		Elev Stake	Elev flow line	
	69.56				
#3		8.74	60.82	55.38	5.44
#4		7.64	61.92	56.35	5.57
#5 Mn Hole		6.09	63.47	57.33	6.14
H6 #24		4.93	64.63	58.30	6.33
5-5116					6.50
#1		4.20	65.36	58.86	6.92
#2		3.21	66.35	59.43	6.58
#3		2.99	66.57	59.99	6.90
#4		2.10	67.46	60.56	6.77
#5 Mn Hole 668	74.57	1.67	67.89	61.12	6.97
5-4664					6.08
#1		5.97	68.60	61.63	6.35
#2		6.34	68.23	62.15	6.70
#3		5.56	69.01	62.66	6.69
#4		4.70	69.87	63.17	5.85
#5 Mn Hole		3.01	70.37	63.68	6.06
5-4664		4.20	70.37	63.68	6.07
#1		5.34	70.41	64.19	5.87
#2		4.32	70.51	64.71	5.99
#3		7.00	70.78	65.22	7.96
#4		3.99	70.58	65.74	7.08
#5		5.67	72.71	66.25	7.21
#1		3.36	71.21	66.25	7.55
#2		4.68	73.70	66.68	7.82
#3		1.75	72.82	67.11	9.04
#4	8.07	80.89	73.22	67.59	9.22
#5 Mn Hole Δ 6-24-00 R		5.16	73.22	67.97	8.21
5-4780		7.09	73.80	68.40	8.60
#1		6.39	74.50	68.50	9.35
#2		4.74	76.15	68.60	9.91
#3		4.13	76.76	68.60	
#4		4.71	76.18	68.60	
#5 Mn Hole		3.84	77.05	68.60	
5-4780		3.04	77.85	68.60	
#1		2.38	78.51	68.60	
#2					

A 3⁰⁰⁻⁰⁰R

66.25
30
65.95

78.21
0.24
78.43

	+	H.I.	-	Elev Sole	Elev Flow Line
	0.74	97.40		96.66	RM. Tennessee Schol.
Mn Hole TP. 1.98		97.14	12.24	85.16	69.50
#3 #29 Δ 8°16'00" R			7.70	79.44	68.71
3-3720					
#1	7.18	87.35	6.97	80.17	68.80
#2			6.57	80.78	68.89
Connect existing Sewer S Line Center Line					
#3			5.66	81.69	68.98
Center Line of Centaloma					
Connect existing Sewer			5.12	82.23	69.12
3-3723					
#1			4.83	82.52	69.21
#2			4.39	82.96	69.30
Mn Hole				77.00	
#3 #30 Dred			4.25	83.10	69.39
1-47.50					
#1			3.52	83.83	69.51
#2			3.08	84.27	69.62
#3	5.53	90.34	2.54	84.81	69.74
#4			5.32	85.02	69.815
#5 Mn Hole Δ 21°19'00" L			4.93	85.41	69.97
#6 #31			4.68	85.46	70.08
3-4720 13' shot					
#1			4.49	85.85	70.20
#2			4.30	86.04	70.31
Mn Hole Δ 15°57'00" L					
#2 #31			4.09	86.25	70.42
4-4745					
#1			4.10	86.24	70.54
#2	7.91	94.41	3.84	86.50	70.65
#3			7.33	87.08	70.77
Mn Hole Δ 18°53'00" R				84.00	
#4 #33			6.78	87.63	70.88
9-9297					
#1			6.20	88.21	70.99
#2			5.54	88.87	71.09
#3			4.12	90.29	71.19
Mn Hole Δ 20°03'00" R				82.00	
#4 #34			3.88	90.53	71.29
9-4425					
#1			4.69	89.72	71.40

9.94					
10.73					
11.37					
11.89					
12.71					
13.11					
13.31					
13.65					
13.71					
14.32					
14.65					
15.07					
15.17					
15.44					
15.58					
15.65					
15.73					
15.83					
15.70					
15.85					
16.31					
16.75					
17.22					
17.78					
19.10					
19.24					
18.32					

77.05					
8.01					
85.06					
5.65					
79.41		M.H. # 29			
85.00		81.69			
3.40		84.00			87.10
81.66		85.00			79.41
		5.65			7.73
		79.41			
		87.10			
		79.41			
		7.70			
91.03					
4.90					86.25
86.05					4.78
					91.03
91.03		85.65			
5.38		70.20			
85.65		75.45			
91.03		M.H. # 31			
5.45		91.03			
85.58		85.58			
70.08		79.00			
15.50		6.58			
		15.50			
		6.58			
		8.92			
91.03					
5.60					
85.42					
90.20					
37.9					
90.08					
3.55					
90.53					

	H.I.		Elev	Stake	
#2	94.41		7.26	87.15	71.50
#3	0.26	86.62	8.05	86.36	71.61
#4 #35	Mn Hole Δ 32° 49' 00" R		1.07	85.58	71.72
#1	7-49.88		2.59	84.03	71.84
#2			3.06	83.56	71.96
#3	H.I. 82.42		4.18	82.44	72.08
#4	check out		5.62	81.00	72.20
#5	Destroyed		6.56	80.06	72.32
#6	Reset		8.11	78.51	72.44
#7	Mn Hole 36 Δ 42° 45' 00" L		9.68	76.94	72.56
#1	Udol 8.66	85.60	8.70	76.90	72.68
#2	Destroyed		5.83	79.77	72.79
#3	Mn Hole #37		5.03	80.57	72.90
#4			3.32	82.28	73.01
#1	9.27	93.62	1.25	84.35	73.13
#2			5.56	88.06	73.24
#3			4.34	89.28	73.36
#4 #35	Mn Hole Δ 58° 18' 00" R		2.85	90.77	73.47
#1	3-37.21		4.92	88.70	73.56
#2			6.34	87.28	73.65
#3	H.I. 89.44		8.15	85.47	73.74
#1	470	88.75	3.46	85.98	73.85
#2	470	89.44	2.88	85.87	73.96
#3			3.28	85.47	74.08
#4			4.24	84.51	74.19
#5			4.89	83.86	74.30

cuts

15.65 -

14.75 -

13.86 -

12.19 -

11.60 -

10.36 -

8.80 -

7.52 -

5.98 -

4.38 -

4.22 -

6.98 -

7.67 -

9.27 -

11.22 -

14.82 -

15.92 -

17.30 -

15.14 -

13.63 -

11.73 -

12.13 -

11.91 -

11.39 -

10.32 -

9.56 -

89.28

410

93.38

i.e.

90.76 -

46.27

76.94

5.48

82.42

13

	+	H.I.	-	Elev stake	Elev Flowline	cut			
		88.75						363 01 3.72	363 12 3.75
									14
Mn Hole #40									86.43
#6 Set South 2-39 55 7P	11.46	91.37	5.96	82.79	74.41	8.38			843
#1 Mn Hole #91			8.84	79.91					95.36
#2			10.59	80.78	74.50	6.28			2.85
#3-95 65			9.79	81.58	74.58	7.00			92.54
#1 T.P.	9.98	99.73	2.26	89.11	74.69	14.42	95.36 2.06 83.10 75.16 8.14		83.11
#2 Mn Hole #365 3-32 07			4.88	94.85	74.80	20.05			100.85
#1			0.39	99.34	74.91	24.43			6.00
#2			5.93	93.80	74.99	18.81			94.85
#3 Mn H. T.P. 4.50 3-32 07		92.06	9.87	89.86	75.08	14.78			
#1			12.17	87.56			95.36 2.58 87.78 75.08 12.70	#2 95.36 2.54 74.94 17.55	96.42
#3 #42 91-24-00 L			6.33	85.73	75.16	10.57		#3 Mn H 100.85 4.43 96.42	3.52
5-32 40									99.94
#1			5.65	86.41	75.24	11.17			74.80
#2			4.03	88.03	75.31	12.72			2.51
#3 T.P.	8.36	99.83	2.28	89.78	75.39	14.39			96.31
#4			0.59	91.47					3.63
#5 M.H. #43 91-24-00 R.			7.27	92.56	75.47	17.09			
3-20 23			6.74	93.09	75.55	17.54			3.52
#1			8.38	91.45	75.60	15.85			3.63
#2	3.97	93.81	9.99	89.84	75.65	14.19			
T.P.	1.41	83.95	11.77	82.07					
#3 connect existing Sewer B line Catalina			3.53	80.42	75.70	4.72			
check B.M. S.W. Udal x Catalina			9.225	74.725	74.69				
					= 0.035 error				
check Flow Line Existing MH			8.15		75.80				

W
Sewer Copistano Street from
Mn. Hole # 25 to Mn. Hole 175 @^{HT} Wimby + Copistano

				Elev Stake	Elev floor Line	Cut
BM T.C. out STUB Mn Hole # 25 Main Interceptor	10.49	78.38		67.89		
Mn. Hole						
0100 # 25 Main Interceptor + 4120	10.49			67.89	61.12	6.77
#1		10.63		67.75	61.96	5.79
#2		9.89		68.49	62.80	5.69
#3		8.61		69.77	63.64	6.13
Mn. Hole #4 # 176 @ Poe		7.97		70.41	64.47	5.94
+ 4786		6.99		71.39	65.52	5.87
#1		5.05		73.53	66.58	6.75
#2		3.16		75.22	67.63	7.59
#3	9.80	86.91	1.27	77.11	68.68	8.43
#4		8.18		78.73	69.73	9.00
#5		6.89		80.02	70.78	9.24
Mn. Hole #7 # 175 @ Wimby		5.73		81.18	71.84	9.34

Sixer. & Gimby from Mn Hole #175
 & Copistrano to DE West of Willow

	HZ.		Elev Stake	Elev flow line grade	Cuts		
BM Tie out Mn Hole #175 & Copistrano	573	8691	81.18				
Mn Hole 0400 #175 & Copistrano		573	81.18	71.84	9.34		
4-48 2 ^d							
#1		573	81.18	73.90	7.28		
#2		490	82.51	75.97	6.54		
#3		312	83.79	78.03	5.76		
#4 1-492 Mn Hole	11.50	97.11	130	85.61	80.09	5.52	
#5 #178 1-9754		936	87.75	82.16	5.59		
#1 3-9854		6.50	90.61	84.49	6.12		
#1		3.81	93.30	86.87	6.43		
#2	10.97	106.78	130	95.81	89.25	6.56	
#3 1-5054 Mn Hole		8.77	98.01	91.63	6.38		
#1 #173 1-4654		6.89	99.89	94.10	5.79		
#1 3-4854		5.64	101.14	95.17	5.97		
#1		4.29	102.49	96.29	6.20		
#2		3.22	103.56	97.40	6.16		
#3 1-5154 Mn Hole	7.56	111.76	2.58	104.20	98.52	5.68	
#1 #172 3-4826	Δ 15°35'00 R		6.78	104.98	99.71	5.27	
#1		5.70	106.06	100.82	5.24		
#2		4.26	107.50	101.93	5.57		
#3 #169 4-9123 TP	8.20	117.05	2.88	108.88	103.05	5.83	
#1	TP	12.87	126.89	506	114.02	7.77	
#2	TP	13.10	138.81	4.60	122.29	114.52	8.52
#3	TP	13.17	150.61	118	125.71	125.99	10. No
#4 #168	Mn Hole 13.11	162.90	0.82	145.28	137.46	7.82	8.70
			7.04	155.86	148.92	6.94	8.26

5.89
 5.14
 0.75
 9.29
 8.93
 0.36
 5.20
 2.76
 0.44

10. No
 10 No
 10 No
 10220 No.

	+	HI.	-	Elev saxe	Elev from Line Grade	cut			
5.52		162.90							
#1	12.08	174.34	0.64	162.26	153.55	8.71	8.90	10 No	$\begin{array}{r} 9.63 \\ 1.44 \\ \hline 0.19 \end{array}$
#2			6.43	167.91	158.18	9.73	9.83	10 No	$\begin{array}{r} 2.97 \\ 2.92 \\ \hline 0.10 \end{array}$
#3	11.82	185.21	0.95	173.39	162.81	10.58	10.74	10 No	$\begin{array}{r} 12.53 \\ 12.77 \\ \hline 0.16 \end{array}$
#4			6.70	178.51	167.44	11.07	11.13	10 No	$\begin{array}{r} 7.20 \\ 7.91 \\ \hline 0.11 \end{array}$
#5 D.E.			4.97	180.24	172.06	8.18	V	10 220 No	

From W line of window
& Quimby

0700 W line Willow 2-30'			13.05	172.16	167.08	5.08			
#1			5.49	179.72	168.07	11.65	12.13	10 50.	$\begin{array}{r} 5.98 \\ 1.50 \\ \hline 0.48 \end{array}$
#2 D.E.			3.69	181.52	169.06	12.46		10 220 50.	

check 8M
SW Quimby
Willow

12.01	173.20
	<u>173.20</u>
	00

✓
 Sewer Across Block 150 Lots 2-9
 Roseville 2' East of Pueblo lotline from Mn Hole
 #169 & Quimby to Mn Hole 171 & Russell and
 East on Russel 154' to D.E.

BM, Tie out Job Mn Hole	12.22	HZ.	-	Old Stake	2' by flow line cross	Cuts		
#169 & Quimby Sec page 16 Mn Hole		121.10		108.88				
of 00 #169 4-38 25			12.22	108.88	103.05	5.83		
#1	12.97	132.82	1.25	119.85	108.79	11.06	✓	10.E.
#2			7.90	124.92	114.52	10.40		"
#3 Mn Hole	12.78	143.29	2.31	130.51	120.26	10.25		"
#4 #170 3-38 33 T.P.	11.99	155.02	6.74 0.26	136.55 143.03	125.99	10.56		10820 E.
#1			10.87	144.15	135.27	8.88	✓	10 E.
#2 Mn Hole	12.17	166.35	2.70 0.84	152.32 154.18	144.55	7.77		"
#3 #171 & Russell 4-38 50			5.07	161.28	153.82	7.46	✓	10820 No
#1	12.15	177.49	1.01	165.34	156.63	8.71	✓	6 No
#2			8.85	168.64	159.44	9.20	✓	"
#3 D.E.W.			6.20	171.29	162.25	9.04	✓	"
#4			4.93	172.56	165.06	7.50	✓	10820 30

✓
 From W Line of Willow & Russell
 5-52 set 10' South of &

#5 D End			6.23	171.26	163.18	8.12		
#4	2.28	169.57	10.20	167.29	161.57	5.72		
#3			3.66	165.91	159.96	5.95		
#2			5.44	164.13	158.35	5.78		
#1			7.72	161.85	156.74	5.11		
5-52's of 00 W line of Willow			9.31	160.26	155.12	5.14		

check BM SW Willow & Russell

8.19
 161.38
 161.33
 0.05 error

673.
 163.18
 125.12
 38.06
 1.61

8.32
 2.22
 7.05
 9.45
 8.45
 1.00

12.58
 11.75
 0.78
 4.54
 3.63
 0.71

Sewer: from Mn Hole #22 Main
 Interceptor Across Lot 20 Point Loma Heights
 84' Cast Iron Pipe 83' concrete Pipe to Mn Hole 164
 P. Poe r on People Lot Line

	2.99	56.10	53.11			
of 00 #22	2.99		53.11 -	46.59	6.52	Cut for Footings - Piers
#1 Pier #1	10.25		45.85 -	47.08	F-1.23	3.85
#1 Pier #2	8.20		47.90 -	47.32	C-0.58 ✓	5.90
#1	4.92		51.18 -	48.30	2.88 ✓	118.20 SE.
T.P. 2-4150 #1	12.71	68.11	0.70	55.90 ✓		
Mn Hole #22 #164			6.14	61.97 - 49.15	12.82 ✓	
			3.09	65.02 - 50.00	15.02 ✓	

Sewer Poe Street from Mn Hole
 #164 North West to Dead End East of Capistrano
 and S.East to Dead End West of Willow

BM. Tie out for Mn Hole #164	Mn Hole	1/2	Elev	Elev	Line
0700 #164	3.09	68.11	65.02	57.05	
5-52			66.53	50.00	
#1		5.16	62.95	57.52	
#2		4.90	63.21	57.99	
#3		4.08	64.03	58.46	
#4		3.65	64.46	58.93	
Mn Hole #5 #165		3.35	64.76	59.39	
5-52 #1	761	73.31	2.41	65.70	59.86
#2		7.08	66.23	60.33	
#3		6.64	66.67	60.80	
#4		6.22	67.09	61.27	
Mn Hole #5 #166		5.94	67.37	61.73	
5-48 #1		4.97	68.34	62.20	
#2		4.70	68.61	62.67	
#3		4.30	69.01	63.14	
#4		4.07	69.24	63.61	
#5 D. End		3.83	69.48	64.07	
check out on tie out Mn Hole #165 Main Intercept		5.95	67.86	64.07	
	12.30	77.32	65.02		
Mn Hole 0700 #164	Going S East	12.30	65.02	57.05	
1-40 #1 P.V.C.		7.91	69.41	62.37	
2-20 #1		5.83	71.49	65.71	
			65.03		
4V E.V.C. 12.99	88.71	1.60	75.72	70.43	
1-20.80 #1		5.81	82.90	75.94	
4-33 RT TP. 12.81	100.89	0.63	88.08		
#1		6.44	94.45	84.98	
TP. 12.24	112.78	0.35	100.54		
#2		11.33	101.45	94.02	
#3	12.93	124.42	129	111.99	103.06

cuts			
9.48	71.84	62.95	8.11
4.97	5.31	8.79	+
15.02	66.53	71.74	
16.53		10.61	
5.43		1.33	
5.22			
5.57			
5.53			
5.37			
5.84			
5.90			
5.87			
5.82			
5.64			
6.14			
5.94			
5.87			
5.63			
5.41			
7.97	✓		
7.04	8.04	10 No.	
5.78	6.64	"	9.09
		"	9.14
		"	0.86
		"	4.80
		"	5.26
		"	8.26
		"	9.01
		"	8.58
		"	0.43
		"	9.28
		"	9.28
		"	0.00
		"	2.27
		"	1.56
		"	0.71
		"	9.29
		"	8.76
		"	0.57

	+	H I	-	Elev SPKE	Elev flowline			
#4 Mr. Hole	12.75	129.42	3.62	120.80	112.09	8.71	✓	10320 No
2-35 T.P.			0.91	123.51				8.39 7.67 0.72
#1 T.P.	12.92	148.00	3.83	132.43	123.61	8.82	9.54	10 No
			1.18	135.08				11.81 11.51 0.60
#2 1-10 T.P.	12.92	160.05	2.92	145.08	135.13	9.95	10.55	"
			0.87	147.13				8.97 8.46 0.51
#1 P.V.C.			12.11	147.94	138.41	9.53	10.04	"
2-20				144.21				4.04 3.50 0.54
#1			7.17	152.88	144.99	8.47	9.21	"
#2 E.V.C.			2.41	157.64	148.43	9.21	9.57	"
3-41 B.T.P.	13.15	172.62	0.58	159.47				11.00 10.54 0.36
#1			6.75	165.87	155.60	10.27	10.42	"
								2.176 2.61 0.15
#2	10.73	183.19	0.16	172.46	162.77	9.69	9.59	"
								6.56 6.65 0.10
#3 D. End West of Willow			6.10	177.09	169.93	7.16	✓	10320 No
Check BM SW B.P. Willow + 800			5.41	177.78				
				177.79				
				0.01 error				
Check BM SW B.P. Quimby + Willow			10.00	173.19				

Sewer Oliphant from
 Mn Hole #21 Main Interceptor To DE
 West of Tustin

		H.I.	-	Elev stake	Elev flow Line			
Mn Hole								
0+00 #21	12.38	63.36		50.98	44.63	6.35		10.820 W.
1-50 Drop					45.98	16.71		
Mn Hole #99	12.62	75.31	0.67	62.69	52.93	9.76		10.820 S.
4-38.85								
#1			6.12	69.19	59.38	9.81	10.53	10' 50"
T.P.	13.06	87.37	1.00	74.31				
#~			11.46	75.91	65.83	10.08	11.21	10' 50"
#3			3.4~	83.95	72.28	11.67	12.52	10' 50"
Mn Hole T.P. 9.92		94.21	2.58	84.79				
#4 #156 & Clove			6.34	87.87	78.73	9.14		10.820 S.
4-39.37								
#1			6.50	87.71	79.52	8.19	9.02	10' 50"
#~			4.80	89.41	80.30	9.11	9.74	10' 50"
#3			6.26	87.95	81.09	6.86	7.48	10' 50"
Mn Hole Block								
#4 #157 & Alley			8.06	86.15	81.88	4.27		10.820 N.
158 PITS								
4-39.37			3.87	90.34	85.19	5.15		
#1			0.84	93.37				
T.P.	10.94	104.31	9.74	94.57	88.49	6.08		
#~			6.17	98.14	91.80	6.34		
#3 Mn Hole	12.78		2.48	101.83	95.11	6.72		
#4 #159 & Tustin		114.61	5.89	108.72	98.03	10.69		
2-90.1			0.87	113.74				
#1			6.82	115.31	100.95	14.36		
T.P.	8.39	122.13						
#~ DE								

9.88
 9.16
 0.72
 9.15
 2.02
 1.13
 7.50
 6.70
 0.80

6.43
 4.60
 0.83
 4.72
 4.07
 0.65
 6.20
 5.58
 0.62

38.65
 155.40

W
 Sewer Tustin St from Mn Hole
 # 159. South to D End

+ H.I. - Elev Stake Elev flow Line cuts

	H.I.		Elev Stake	Elev flow Line	cuts
Mn Hole 0700 # 159 5-47 ⁵⁰	11.23	113.06	101.83	95.11	6.72
#1			8.37 - 104.69	99.10	5.59
#2			5.11 - 107.95	103.09	4.86
I.P.	11.94	124.66	0.34 - 112.72		
#3			9.84 - 114.82	107.08	7.74
#4			3.94 - 120.72	111.07	9.65
Mn Hole I.P.	13.00	136.36	1.30 - 123.36		
#5 #100 5-47 ⁵⁰			10.26 - 126.10	115.06	11.04
#1			4.40 - 131.96	119.67	12.29
I.P.	12.68	148.15	0.89 - 135.47		
#2			11.28 - 136.87	124.28	12.59
#3			4.73 - 143.42	128.89	14.53
#4	4.30	152.21	0.24 - 147.91	133.50	14.41
#5 D End			2.22 - 149.99	138.10	11.89
I.P.	0.56	142.42	10.35 - 141.86		
Set BM on D End of Alley South of Tustin			10.18 - 132.24		

138.10
 115.06
 5 23.04
 4.61

115.06
 95.11
 5 19.95
 3.99

W
Sewer Alley Block Point
Loma Heights from Mn Hole # 157 South
to D End

	H.I	-	Elev Stake	Elev flow line	cuts	
Mn Hole 0700 # 157 5-4750	12.62	98.77	86.15	81.88	4.27	
#1		3.76	95.01	86.50	8.51	
TR	11.80	109.90	0.67	98.10		
#2		10.58	99.32	91.12	8.20	
#3		6.98	102.92	95.74	7.18	
Mn Hole #4 # 158 5-4750	12.39	119.30	2.99	106.91	120.36	6.55
#5		6.90	112.40	104.98	7.42	
#1	13.21	130.55	1.96	117.34	108.59	8.75
#2		8.75	122.10	112.20	9.90	
#3		5.58	124.97	115.81	9.16	
#4	6.36	136.01	0.90	129.65	119.42	10.23
#5 D End		3.81	132.20	123.03	9.17	
			132.24			
			0.04			

123.83
104.98
18.85
3.61

104.94
81.88
518.30
4.62

24

W
Sewer Newell street from
Mn Hole # 19 Main Interceptor to D End
Nest of Plum

	HI		Elev. Jct	Elev. flow line see page 10	cuts			
Mn Hole 0+00 #19	1226	55.42	93.16	37.90	526			10 8 20 W.
1-50 D.Mn Hole				39.00	15.64			
#1 #349	12.56	67.20	0.78	54.64	44.00	10.64		10 2 20 S.
4-34.12								
#1 T.P.	12.73	79.28	3.78	63.42	51.75	42.67	13.38	10' 50.
#2			0.65	66.55				
#2			8.72	70.56	59.50	11.06	11.77	10' 50.
#3	12.94	91.87	0.35	78.93	67.25	11.68	12.46	10' 50.
Mn Hole #4 #199			6.86	85.01	74.99	10.02		10 2 20 S.
6-45								
#1	12.16	102.59	1.44	90.43	79.49	10.94	11.32	10' 50.
#2			7.81	94.78	83.99	10.79	11.15	10' 50.
#3 T.P.	11.78	114.03	2.94	99.65	88.49	11.16	11.33	10' 50.
#4			0.34	102.25				
#4			10.86	103.17	92.99	10.18	10.31	10' 50.
#5 D End			6.08	107.95	97.49	10.46	10.66	10' 50.
#6			3.96	110.07	101.99	8.08		10 8 20 S.
T.P.	3.01	104.71	12.33	101.70				
check out on Mn Hole #199 of Plum McCooler see page 27			6.69	98.02				
				97.93				
				0.09 error				

2.00
1.37
0.71
10.53
9.82
0.71
2.18
1.40
0.78

3.31
2.95
0.38

8.82
8.26
0.56
3.97
3.32
0.65

7.23
7.10
0.13
2.44
2.24
0.20

Sewer Across Lots 5 & 6 Block TWAy Blocks
 from Mn Hole #2 & Main Interceptor to D End
 S West of Wawona

995.4
 90.78
 2185.6
 4.25

90.78
 61.93
 3129.05
 9.68

26

	+	HI	-	Elev Stake	Elev flowline	Cuts
Mn Hole						
0700 #24	11.02	75.65		64.63	58.30	6.33
120 Brk						
#1			8.13	67.52	61.93	5.59
3-38.73 IR	12.89	88.00	0.54	75.11		
#1			8.01	79.99	71.61	8.38
T.P.	12.62	100.37	0.25	87.75		
#2			10.94	89.43	81.29	8.14
Mn Hole						
#3 #161	292.39-002		1.65	98.72	90.98	7.74
2-40 IR	11.75	111.23	0.89	99.48		
#1			5.49	105.74	95.26	10.48
D End						
#4			3.18	108.05	99.54	8.51
T.P.	982	119.51	1.54	109.69		
check D End. elephant.			4.18	115.33		
				115.31		
				0.02 error		

125' Ext on pp 78 of this book.

Server McCaulay Street from
 Mn Hole #17 Main Interceptor to D.E. North
 of Plum

12.97
 1.16
 14.13

27

	HI	-	Elev	Elev	flowline			
				Grade				
Mn Hole #17 0100 3-3667	6.20	35.84		29.64	25.96	3.68		
#1			5.87	29.97	26.98	2.99		
#2	9.01	40.04	4.81	31.03	27.99	3.04		
Mn Hole #3 #14 6-50 T.P.	12.75	52.71	2.61	37.43	29.00	8.43		10' 20" S.
#1 TR	12.13	64.10	9.40	48.31	37.00	11.31	11.66	10' 50"
#2			4.62	59.48	45.00	14.48	14.65	10' 50"
#3 T.P.	11.53	74.86	0.77	63.33	53.00	10.33		10' 50"
#4	12.72	87.08	0.50	74.36				
#5			8.23	78.85	61.00	17.85	18.05	10' 50"
Mn Hole #6 #143 4-4875	12.98	97.64	2.42	84.66	69.00	15.66		10' 50"
#1			8.31	89.33	77.00	12.33		10' 20" N.
#2	8.89	109.58	1.95	91.59	79.14	12.45	12.97	10' N.
#3			6.47	95.69	81.29	14.40	14.87	10' N.
Mn Hole & Plum #4 #144 6-4553			6.47	98.11	83.93	14.18	15.10	10' N.
#1		111.12	6.65	97.93	85.58	12.35		10' 20" N.
#2			14.13	96.99	88.65	8.34		
#3			12.99	98.13	91.72	6.41		
#4			10.72	100.90	94.79	5.61		
#5			8.20	102.92	97.86	5.06		
#6 O End			4.66	106.46	100.93	5.53		
#9			0.41	110.91	109.00	6.71		
			13.19	97.93				

3.34
 3.23
 8.33
 6.76
 6.49
 0.17
 3.12
 7.56
 2.36
 0.20
 1.75
 1.75
 0.80

9.46
 8.96
 0.51
 5.89
 4.92
 0.47
 2.40
 2.53
 0.42

W
Sewer Songe street from Rosecross
Mn. Hole #61 West to connection with existing Sewer
E Line of Willow

#	H.I.	-	Elev	Elev flow line Grade	Cuts			
Mn. Hole 0700 #61 5-50 ²⁰ #1	11.31	39.63	23.32	1585	7.47		60.36	55.92
#2			5.68	28.95	2.066	8.29	5.19	4.44
#3	T.P. 13.14	47.36	2.12 0.41	32.51 39.22	25.97	7.04	55.17	60.36
#4			10.74	36.62	30.28	6.34		
Mn. Hole #5 #211 5-44 #1	13.04	57.79	2.61	44.75	35.09	9.66	10.13	60.36
#2			6.01	51.78	39.90	11.88	5.16 4.63 0.57	4.12
#3			2.47	55.32	41.80	13.52	56.24	41.80
#4	7.49	62.37	2.94	59.85	43.69	11.16	14.44	
#5			8.62	53.72	45.59	8.13		
Mn. Hole #5 #212 5-51 T.P. #1	13.08	74.33	1.09	61.25			2.76 2.73 1.50 3.24 1.07 5.15 5.70 1.45 5.33 4.07 1.26	60.36 H.I. 4.12 57.24 39.80 41.34
#2			4.40	57.94	49.38	8.56		
#3			11.32	63.01	55.35	7.66	9.58	M.H. #211
#4			9.79	69.54	61.31	8.23	7.34	
T.P. #3	13.10	86.84	0.59	73.74			10.220 No. 10.300	
#4			12.09	74.75	67.28	7.47	9.97	
#5			6.56	82.28	73.24	9.04	10.04	
Mn. Hole #5 #213 & Evergreen 7-47 86 T.P. #1	13.01	99.07	0.42 0.78	86.92 86.06	79.21	7.21	8.80	
#2			5.07	94.00	85.65	8.35	11.35	
#3			12.04	110.02	92.09	5.89	10.09	
#4							4.68 3.32 1.31 8.09 6.38 1.71 2.88 1.55 1.33 4.11 1.60 2.51	
#5							3.17 3.23 1.74	
#6							4.94 3.16 1.78	

	+	HI 11002	-	Elev stake	Elev flow line grade	Cuts			
#3			6.05	103.97	-98.53	5.44-	7.41	10' No.	$\frac{2.57}{0.60}$ 1.97
T.P.	12.85	122.13	0.74	109.28					
#4			10.43	111.70	-104.97	6.73-	8.33	"	$\frac{8.64}{4.05}$ 7.60
#5			3.98	118.15	-111.41	6.74-	8.14	"	$\frac{6.47}{5.07}$ 1.40
T.P.	11.84	133.32	0.65	121.48					
#6			10.19	123.13	-117.85	5.28-	6.47	"	$\frac{3.64}{2.45}$ 1.19
T.P.	8.10	140.49	0.93	132.39					
#7	Connect existing sewer. E. Line Willow		6.62	133.87	-124.29	9.58-			
check out on BM NW 8P. Songer Willow			4.16	136.33					
check BM SW 8P Willow & Zola			2.30	138.19					
				138.21					
				0.02 error					

Sewer, Voltaire St from Rose crans
 Mn Hole #60 to connect with existing Sewer
 East of Willow

	+	H.I.	-	Elev Stake	Elev flow Line Grade	cuts	
Mn Hole							
0+00 #60	11.04	23.56		12.52	7.32	8.20	
4-43.82			3.05	20.51	13.02	7.49	
#1 T.P.	12.26	34.95	0.87	22.69			
			9.33	25.62	18.72	6.90	
#3			5.02	29.93	24.42	5.51	
Mn Hole							
#2 #205 TP	12.72	46.74	0.73	34.22	30.12	4.10	10220 No.
2-45 TP	12.44	58.46	0.92	46.02			2.00 8.02 8.34
#1			8.84	49.62	44.52	5.10	10 No.
Break TP	12.02	70.07	0.43	58.03		4.72	10.27 7.99 0.28
#2 RYC			6.99	63.08	58.92	4.16	"
2 10 Gradebook							
#1 TP	13.05	82.41	3.52	66.55	61.72	4.83	"
			0.71	69.36		5.05	3.18 2.48 0.30
#2 E.V.C			12.22	70.19	63.73	6.46	"
2-35							3.96 3.07 0.49
#1 Mn Hole TP	12.65	94.68	4.12	78.29	69.36	8.93	"
			0.38	82.03		9.42	
#2 #206			7.76	86.92	75.00	11.92	10220 No.
6-44.2							2.60 1.22 1.33
#1	6.69	99.01	2.36	92.32	77.50	14.82	10 No.
						16.15	3.25 2.55 1.41
#4			3.78	95.23	80.00	15.23	10 No.
#3	12.62	104.17	7.46	91.55	82.50	9.05	
#4			6.94	97.23	85.00	12.23	
#5	12.63	114.27	2.53	101.64	87.50	14.14	
Drop Mn Hole					90.00	17.27	
#6 207			7.00	107.27	91.49	15.78	
4-39.25							
#1 TP	11.64	125.98	4.21	110.06	94.24	15.82	
			0.13	114.14			
#2			11.38	114.40	96.99	17.41	
#3			9.78	116.00	99.74	16.26	
Mn Hole							
#4 #208 connect existing sewer			8.04	117.74	102.50	15.24	
TP	9.37	133.72	1.43	124.35			
TP	10.74	143.51	0.95	132.77			
TP	11.90	154.02	1.39	142.12			
TP	12.83	166.01	0.84	153.18			
TP	6.81	172.30	0.52	165.49			
			6.18	166.12	166.17 (5')		Whittier E Willow
					8.05		

Server Udal from Mn. Hole # 58 Prop.
to connection to Existing Server N. West

	+	H.I.	-	Elev. store	Elev flow line	cuts		+	H.I.	-	Elev.
Mn Hole 0700 # 58 3-30	12.17	34.99		22.82	50/ 2500	16.81 7.82		8.75	177.85 185.15	1.45	176.40
#1			8.27	26.72	19.3	7.40				4.75	180.40
#2			3.07	31.92	23.64	8.28					
#195	12.74	47.40	0.33	34.66							
#3 792.50			10.14	37.26	27.96	9.30		10820 No.			
TP.	12.30	59.25	0.45	46.95							
#1			6.06	53.19	45.7	7.47	8.11	10' No.			$\frac{5.57}{4.75}$ 0.64
TP	12.04	70.66	0.63	58.62							
TP	12.05	82.13	0.58	70.08							$\frac{4.27}{3.73}$ 0.54
#2			10.68	71.45	63.49	4.96	8.50	"			
TP.	12.66	94.39	0.40	81.73							
#3			5.49	88.90	81.25	4.65	7.87	"			$\frac{4.90}{4.65}$ 0.22
TP.	12.00	106.03	0.36	94.03							
#196			1.59	104.44	99.02	5.42		10820 No.			
#4 4-39.85			0.24	105.79							
TP.	12.50	118.29									$\frac{2.98}{4.88}$ 0.10
#1			2.26	116.03	106.51	4.52	9.42	10' No.			
TP.	12.55	130.39	0.45	117.84							$\frac{5.55}{5.34}$ 0.02
#2			7.06	123.33	114.01	4.32	9.30	"			
TP.	12.80	142.93	0.26	130.13							$\frac{5.30}{5.13}$ 0.17
#3			12.31	130.62	121.50	4.10	8.95	"			
connect existing server			5.15	137.78	129.00	8.78					
#4			1.03	141.40							
TP.	12.57	154.47									
TP.	12.32	166.22	0.57	153.90							
TP.	12.47	177.85	0.84	165.38							

✓

Sewer Tennyson from Mn. Hole
 # 57 N West to connection with existing
 sewer

Bot. Stake W of Mn. Hole	12.99	25.44		12.95		
0100 #57			10.91	15.03	5.09	9.99 -
3-5-40						
#1			7.22	18.22	11.04	7.18 -
#2			2.43	23.01	17.04	5.97 -
TP	11.89	36.65	0.68	24.76		
#3			7.77	28.88	23.04	5.84 -
#4	12.26	48.65	0.26	36.39	29.04	7.35 -
#5 Mn. Hole #194 5-40			1.78	46.87	35.09	11.83 -
TP	13.10	61.45	0.30	48.35		
TP	12.29	73.33	0.41	61.04		
#1			11.78	61.55	53.24	8.31 -
#2	12.45	85.53	0.25	73.08		
#3			4.75	80.78	71.44	9.34 -
TP	12.67	97.46	0.74	84.79		
TP	13.21	110.10	0.57	96.89		
#3			11.03	99.07	89.64	9.43 -
TP	13.20	122.78	0.52	109.58		
#4			6.66	116.12	107.84	8.28 -
TP	13.15	135.45	0.48	122.30		

	H.I.		Existing	Ex. floor line Grade	Cuts	
Mr. Hole #5 #193 5-40	135.95		4.59	130.86	126.04	9.82
T.P.	13.02	148.14	0.33	135.12		
#1			2.77	145.37	136.24	9.13
T.P.	13.22	160.71	0.65	147.49		
#2			5.76	154.95	146.44	8.51
T.P.	12.18	172.55	0.34	160.37		
#3			7.80	164.75	156.64	8.11
T.P.	11.17	183.14	0.58	171.97		
#4 1-92.80			9.29	173.85	166.84	7.01
Mr. Hole #5 Connect existing sewer			2.71	180.43	177.04	3.39
				180.40		
				0.03		

W
Sewer Sterne from Mn Hok
#56 To D E Northwest of Evergreen

First stake E of Mn Hok #56	#	#I		Elev Stake	Elev flow line grade	cuts
	6.10	16.49	-	10.39		
Mn Hok 0+00 #56 4-35			6.20	10.29	7.07	6.22
#1	10.17	23.64	3.02	13.47	7.81	5.66
#2			7.21	16.43	11.56	4.87
#3			3.41	20.23	15.30	4.93
T.P.	13.03	36.95	0.22	23.42		
#4 Break 3-90			10.50	25.95	19.05	6.90
#1			3.96	32.79	26.69	5.80
T.P.	12.74	48.98	0.21	36.24		
#2			10.36	38.62	34.33	4.29
Mn Hok #182 1-35	12.63 Electric	61.17	0.44	48.54	41.97	6.57
#1 Break 3-33 33			4.08	57.09	47.99	9.10
T.P.	13.11	73.48	0.80	60.37		
#1			6.43	67.05	57.92	9.13
T.P.	12.62	85.35	0.75	72.73		
#2			7.84	77.51	68.85	8.66
T.P.	12.53	97.26	0.62	84.73		
#3 Break 3-33 33			8.10	89.16	79.29	9.87
T.P.	12.41	108.57	1.10	96.16		
#1			8.71	99.86	90.19	7.67

	+	H.I. 108.57	-	Elev Stake	Elev flow line Grade	Cuts
TP	12.96	120.72	0.81	107.76		
#2			11.13	109.59	105.09	4.50
TP	13.00	133.12	0.60	120.12		
#3 Break			7.31	125.81	117.99	7.82
3-33 ³³						
TP	12.79	145.53	0.38	132.79		
#1			4.42	141.11	130.55	10.56
TP	12.66	157.74	0.45	145.08		
#2			4.16	153.58	143.12	10.46
TP	13.16	170.70	0.20	157.54		
#3 Mn Hole #200 E. line of Eye green			9.32	161.38	155.69	5.69
4-32 ⁵⁰						
TP	12.61	182.99	0.32	170.38		
#1			11.86	171.13	161.02	10.11
#2			6.72	176.27	166.35	9.92
#3			1.86	181.13	171.68	9.45
TP	13.21	195.56	0.64	182.35	177.01	5.34
#4 D. End			8.74	184.82	177.01	9.81
check out on D. End. see page 36			2.85	192.71		
				192.71		
				1.00		

W
Sterne Willow to D End

	East +	HI	-	Ek	Elev flow Line Grade SWBP Russell + Willow	cuts
B.M.	8.29	169.62		161.33		
T.P.	11.58	180.86	0.34	169.28		
E Line of Willow			7.95	173.41	169.87	3.54
#40 T.P.	12.04	192.00	0.90	179.96		
#1			10.21	181.79	173.15	8.64
#2			3.88	188.12	176.43	11.69
#3	4.27	195.56	0.71	191.29	179.71	11.58
#4. D End			2.85	192.71	182.99	9.72

W
Sewer Russell Street from
Mr. Hole #55 Rosecrans to the E. Line
of Willow

26.37
13.20
13.17

11.24

37

	+	M.I.	-	Elev.	Elev. Flowline	Cut.		
Drop Mr. Hole #55 7-42.14	12.87	26.37		13.50	3.10 7.00	10.40 6.50		
#1			9.24	17.13	10.83	6.30		
#2			5.16	21.21	14.66	6.55		
#3	12.22	37.87	0.72	25.65	18.49	7.16		
#4			8.06	29.81	22.33	7.48		
#5 TR	12.37	49.90	3.33 8.34	34.54 37.53	26.17	8.37		
#6 Mr. Hole			11.46	38.44	30.00	8.44		
#7 #178 3-35			6.37	43.53	33.89	9.69		
#1			3.22	46.68	40.02	6.66		
TP	13.08	62.44	0.54	49.36				
#2			10.42	52.02	46.20	5.82		
B.K. #3 3-33.33			5.05	57.39	52.39	5.00	4.91	10 No. 4.22 0.09
TP	12.46	74.60	0.30	62.14				
#1			8.91	65.69	59.39	6.30	6.92	" 11.70 0.62
TP	12.55	86.36	0.79	73.81				
#2			9.77	76.59	66.40	10.19	10.71	" 0.99 0.47 0.52
TP Mr. Hole	9.20	95.02	0.54	85.82				
#3 #179 3-43.33			7.19	87.83	73.41	14.42		10 200 No.
#1			2.56	92.46	75.79	16.67	17.97	10 No. 3.74 2.14 1.30

	+	H.I.	-	Elev.	Elev. Flow Line	Cut.	
		95.02					
#2			8.15	86.87	78.17	8.70	10.30
TP.	13.05	107.70	0.37	94.85			
Drop Mn					80.56	21.15	
#3 Hole #180			5.99	101.71	90.48	11.23	10.20 S.
5-46							
TP.	12.98	119.60	1.08	106.62			
#1			6.85	112.75	100.78	11.97	
#2	TP.	12.91	132.19	0.32	119.28	111.08	8.20
#3			0.69	131.50	121.38	10.12	
TP.	12.80	144.39	0.60	131.59			
#4			2.08	142.31	131.69	10.62	
TP.	12.59	156.54	0.44	148.95			
Mn. Hole							
#5 #181			6.09	150.45	142.00	8.45	10.820 S.
3-35							
#1	TP.	10.41	164.99	1.96	154.58	145.01	9.57
#2			7.20	157.79	148.02	9.77	
#3			4.68	160.31	151.03	9.28	
Connect existing sewer E Line of Willow							
for sewer West of Willow see page 18 this book			3.65	161.34	Checked on Russell & Willow.		
				161.33			
				0.01			

161.33
6.72
5.12
1.60

H
 Sewer Quimby Street from
 Mn. Hole # 54 to D End East of Willow
 + H.I. - Elevation Elevation
 Line Grade

Cuts

Mn. Hole #54 6-93 23	12.02	23.26		11.24	2.13 7.50	9.11 6.74			
#1			9.16	14.10	7.90	6.70			
#2			5.64	17.62	10.30	7.32			
#3 T.P.	12.88	35.63	2.35 0.51	20.91 22.75	13.20	7.71			
#4			11.75	23.88	16.10	7.78			
#5			8.50	27.13	19.01	8.12			
Mn. Hole #6 #167 to Locust 5-95			4.55	31.08	21.92	9.16			
#1			1.73	33.90	25.79	8.11			
T.P.	12.90	47.67	0.36	35.27					
#2			10.21	37.46	29.66	7.80			
#3			7.08	40.59	33.53	7.06			
#4			2.73	44.94	37.40	7.54			
T.P.	13.18	60.31	0.54	47.13					
M.H. #197 #5 4-36 25			6.63	53.68	41.27	12.41			
T.P.	13.06	72.98	0.89	59.42					
#1			11.03	61.45	52.69	8.76	9.06	10 No.	5.68 5.38 0.30
#2			2.01	70.47	64.11	8.36	6.63	"	6.26 5.94 0.32
T.P.	13.17	84.91	0.74	71.74					
#3			2.10	82.71	75.53	7.18	7.45	"	5.12 4.85 0.27

	+	HI	-	Elev SPKE	Elev flow line	cuts		
		8991						
TP	13.12	97.93	0.60	84.31				
TP	12.82	109.85	0.90	97.03				
#4 ^{M.H. 198} 3-41-67	to Evergreen		11.48	98.37	86.95	11.92		10.320 No
TP	13.01	122.11	0.75	109.10				6.00 5.95 0.05
#1			6.13	115.98	103.03	12.95	12.90	10 No.
TP	13.25	134.63	0.73	121.38				4.89 4.67 0.22
#2			2.59	132.04	119.11	12.93	13.15	"
TP	12.83	147.31	0.15	134.98				4.96 4.63 0.23
#3 ^{DVC} 2-10	TP	12.83	159.92	0.22	147.09			6.28 6.18 0.10
#1 ^{curve}			12.69	147.23	138.534 139.06	8.70	8.80	"
#2 ^{BYC} 3-33-22			9.55	150.37	140.78	9.57	9.74	"
								3.15 3.00 0.15
#1			2.93	156.99	146.51	10.48		6 No.
TP	12.94	172.53	0.38	159.59				
#1			10.57	161.96	152.24	9.72		
#3 ^{D End}			7.63	164.90	157.98	8.92		
TP	5.84	177.55	0.82	171.71				
check B.M	SW. Quimby Willow		4.37	173.18	173.20 0.02			

Sewer Po^e Street from Mn. Hole
 # 53 Rosecrans to DE East of Willow

	+	H.I	-	Elev. Stone	Elev. flow line	cuts
Mn. Hole 0700 # 53 5-52	9.60	16.86		7.26	1.16	6.10
#1			8.04	8.82	-2.82	6.00
#2			6.32	10.54	-4.49	6.05
#3			4.85	12.01	-6.15	5.86
#4			3.09	13.77	-7.81	5.96
#5 #162 Mn. Hole Schoust TP 9-33.75	10.23	25.81	1.28	15.58	9.48	6.10
#1			9.58	16.23	-10.86	5.37
#2			8.44	17.37	-12.25	5.12
#3			6.33	19.48	-13.63	5.85
Mn. Hole #44.150 2-50 TP	12.37	37.90	3.72	22.09	15.02	7.07
#1 TP	13.11	50.19	0.28	25.53		10.820 No
#2 Break			3.84	34.06	27.50	6.56 6.66
#3 TP	13.00	62.88	0.82	37.08		10. No
#1 TP	12.75	75.17	2.87	47.32	40.02	7.30 7.33
#2 TP	13.00	62.88	0.31	49.88		
#1 TP	12.75	75.17	5.20	57.68	52.51	5.47 5.33
#2 TP	13.12	87.61	0.46	62.42		
#1 TP	13.12	87.61	3.03	72.14	65.00	7.14
#2 TP	13.12	87.61	0.68	79.99		10. No

8.69
 4.52
 0.10

8.90
 8.97
 0.03

4.77
 4.97
 0.18

4.26
 4.26
 0.00

	+	H.I. 87.61	-	Elev Stake	Elev flow Line					
#3			1.71	8590	77.48	8.42	9.25	10. No.		$\frac{9.12}{3.95}$ 0.17
TP	12.77	99.27	1.11	8650						
#4	Mn Hole # 192 E. Evergreen		1.44	9785	89.97	7.86		10. 220 No.		
4-33	TP	12.93	111.56	98.63						
#1			2.69	10887	98.98	9.89	9.99	10. No.		$\frac{9.99}{4.89}$ 0.10
TP	12.98	123.94	0.60	11096						
#2			6.64	117.30	107.99	9.31	9.81			$\frac{1.57}{1.07}$ 0.50
	12.78	136.17	0.55	123.39						
#3			11.37	124.80	117.00	7.80	7.80			$\frac{9.21}{4.21}$ 0.06
#4 Break			3.47	132.70	126.01	6.69	7.05	"		$\frac{1.32}{6.72}$ 0.36
TP	12.98	148.58	0.57	135.60						
#1 TP	13.01	160.69	0.90	147.68	137.67	10.01	10.07	"		$\frac{1.73}{1.62}$ 0.06
#2			1.37	159.32	149.33	9.99	10.50	"		$\frac{10.23}{10.22}$ 0.57
TP	13.17	173.21	0.65	160.04						
#3 D End E. of Willow			4.51	168.70	160.99	7.71	8.10	10. No.		$\frac{1.33}{4.24}$ 0.37
TP	13.07	185.31	0.97	172.24						
check out on B.M. SW	Poe & Willow		7.52	177.79	177.79					
				177.79						
				.00						

Sewer. Oliphant from Mn. Hole # 51
Pascerans Street to Connecting with existing
sewer E Line of Willow

	+	HI	-	Elev stake	Elev flow line	cuts
Mn. Hole # 51 5-99 ²²	9.60	15.23		5.63	10.17	5.46
#1			7.24	7.99	1.15	6.84
#2			6.94	8.29	2.12	6.17
#3			5.91	9.82	3.10	6.72
#4			4.86	10.37	4.08	6.29
#5			4.07	11.16	5.05	6.11
#6			3.42	11.81	6.03	5.78
#7	8.27	21.77	1.73	13.50	7.01	6.49
Mn. Hole # 151 4-91 ²⁵			7.35	14.42	7.99	6.43
#1			7.00	14.77	9.23	5.54
#2			5.58	16.19	10.96	5.73
#3			3.55	18.22	11.70	6.52
Mn. Hole # 152 5-35	12.46	34.00	0.23	21.54	12.94	8.50
#1			5.15	28.85	22.95	5.90 5.86
TP	12.60	45.88	0.72	33.28		10. No
#2			7.37	38.51	32.96	5.55 5.73
TP	13.14	58.58	0.44	45.44		"
#3			9.34	49.24	42.97	6.27 6.46
TP	13.20	71.56	0.22	58.36		"
#4			12.64	58.92	52.98	5.94 6.20

10 820 No

$$\begin{array}{r} 5.92 \\ 5.88 \\ \hline 2.04 \end{array}$$

$$\begin{array}{r} 6.11 \\ 5.93 \\ \hline 0.18 \end{array}$$

$$\begin{array}{r} 5.28 \\ 5.09 \\ \hline 0.19 \end{array}$$

$$\begin{array}{r} 6.07 \\ 5.81 \\ \hline 0.26 \end{array}$$

W

Sewer Nerve 11 from Mn. Hole
#50 Rosecrans N West to D. End East
of Willow

	+	HI	-	Elev. Stake	Elev. flow line	Cuts
Drop Mn. Hole 0+00 #50 8-44-22	980	17.66		786-	2.00 0.48	5.86 8.39
#1			9.05	8.61	2.89	5.72-
#2			8.55	9.11	3.78	5.33-
#3			8.11	9.55	4.67	4.88-
#4			7.40	10.26	5.56	4.70-
#5			6.53	11.13	6.45	4.68-
#6			5.49	12.17	7.34	4.83-
#7			4.48	13.18	8.23	4.95-
Mn. Hole #8 #146 7-44-25			3.27	14.39	9.11	5.28-
#1			1.90	15.76	11.06	4.70-
TP	13.09	30.19	0.56	17.10		
#2			12.29	17.95	13.01	4.94-
#3			9.77	20.42	14.96	5.46-
#4			6.54	23.65	16.91	6.74-
#5			1.98	28.21	18.86	9.35-
TP	13.17	43.24	0.12	30.07		
#6			9.64	33.60	20.81	12.19-
Mn. Hole #7 #147			7.26	38.98	22.75	16.23-
4-95TP	13.11	56.15	0.20	43.04		

	+	H.I. 56.15	-	Elev Stake	Elev flow line	cuts
#1			12.48	43.67	31.30	12.37 -
#2			9.24	46.91	39.85	7.06 -
#3	12.38	66.53	2.00	54.15	48.40	5.75 -
Mn Hole #4 #198	12.93	79.11	0.35	66.18	56.95	9.23 -
			4.43.75			
#1			6.46	72.65	57.43	15.22 -
#2			9.11	75.00	57.91	17.09 -
#3			3.53	76.58	58.39	18.19 -
#4 D End			4.40	74.71	58.87	15.84 -
TP	12.51	91.38	0.24	78.87		
check out on Mn Hole Tie out #193 to Mc Casky			2.01	89.37		
				87.33		
				0.04 error		

N
Sewer Lowell Street from
Mn. Hole #13. Rosecrans to D. End North
of Plum.

11.31
2.50
87.81
87.81
19.73
15.31
96.2
1.20

47

Drop Mn. Hole 0100 #13 8-44 ²⁰	10.53	18.32	7.79	+2.50 -1.78	5.29- 9.57-	
#1		9.48	8.84	3.48	5.36 ✓	
#2		8.33	9.99	4.45	5.54 ✓	
#3		7.36	10.96	5.43	5.53 ✓	
#4		6.30	12.02	6.40	5.62 ✓	
#5		5.26	13.06	7.38	5.65 ✓	
#6		4.07	14.25	8.36	5.89 ✓	
#7		2.99	15.33	9.33	6.00 ✓	
Mn. Hole #8 #135 8-46 ²⁵	Locust	1.98	16.34	10.31	6.03 ✓	
#1		1.25	17.07	11.50	5.56 ✓	
#2	12.70	30.89	0.13	18.19	12.71	5.48 ✓
#3		11.32	19.57	13.91	5.66 ✓	
#4		9.99	20.90	15.01	5.79 ✓	
#5		8.64	22.25	16.31	5.94 ✓	
#6		7.35	23.54	17.51	6.03 ✓	
#7		5.90	24.99	18.72	6.27 ✓	
Mn. Hole #8 #136 7-47 ⁸⁶	Evergreen	4.28	26.61	19.93	6.68 ✓	
#1		2.65	28.24	23.23	5.01 ✓	
T.P.	11.62	42.29	0.22	30.67	24.5	
#2		10.99	31.30	26.52	4.78 ✓	

2.50
976
3.476
976
4.452
976
5.428
976
6.404
976
7.380
976
8.356
976
9.332
976
10.308
43.00
19.73
723.07
3.893

		HI 42.29	-	Elev. store Elev floor line	Cut
#3			7.20	35.09 - 29.82	5.27 ✓
#4			3.33	38.96 - 33.11	5.85 ✓
TP	12.81	54.76	0.34	41.95 - 37.27	
#5			11.81	42.95 - 36.41	6.54 ✓
#6			7.89	46.87 - 39.70	7.17 ✓
#7	Mn Hole #137	E. Line of Willow	3.76	51.00 - 43.00	8.00 ✓
5-50					
#1			2.21	52.55 - 46.70	5.85 ✓
TP	12.25	66.76	0.25	54.51	
#2			11.74	55.02 - 50.40	4.62 ✓
#3			6.95	59.81 - 54.10	5.71 ✓
#4			1.97	64.79 - 57.80	6.99 ✓
TP	12.69	78.95	0.50	66.26 - 61.50	8.23 ✓
Drop Mn Hole #5 #138			9.22	69.73 - 62.00	6.73 ✓
4-38 25					
#1			5.28	73.67 - 66.25	7.42 ✓
#2			1.53	77.42 - 69.50	7.92 ✓
TP	12.54	91.25	0.24	78.71	
#3			10.36	80.89 - 72.75	8.14 ✓

	+	H. I.	-	Elev stake	Elev/low line	cut
		91.25				
^{North} #4 #139 & Plum 5-47			7.00	84.25	76.00	8.25 ✓
#1			5.56	85.69	91.40	4.29 ✓
check ^{NW} 3rd. 3rd. corner Plum			4.05	87.20		
T.P.	12.91	104.00	0.16	91.09		
#2			12.42	91.58	86.80	4.78 ✓
#3			5.94	98.06	92.20	5.86 ✓
	12.52	116.04	0.48	103.52		
#4			11.64	104.40	97.60	6.80 ✓
#5 D. End. N. of Plum			4.50	111.54	103.00	8.54 ✓
T.P.	10.54	125.66	0.92	115.12		
Check D. End. N. of Plum & roots			2.55	123.11		
				123.11		
				0.00		

103.00
76.00
527.00
2.40

49

W
Sewer Plum. Street from Mn Hole
#139 & Howell. South to Mn Hole #141
& Jarvis

50

Mn H
0+00 #139 12.31 96.56 84.25- 76.00 8.25 ✓
5-47⁵⁰
1-32⁵⁰

#1 10.19 86.37- 79.66 6.71 ✓

#2 TP 12.53 108.77 2.34 94.22- 83.32 10.90 ✓
0.82 96.24

#3 9.75 99.02- 86.98 12.04 ✓

#4 8.53 100.24- 90.64 9.60 ✓

#5 6.34 102.43- 94.30 8.13 ✓

1-32⁵⁰ Mn Hole
#140 & Keak 3.08 105.69- 96.80 ~~8.89~~ ✓ 9.80 Reset.

2-31²⁵ TP 12.43 120.63 0.57 108.20

#1 10.54 110.09- 98.33 11.76 ✓

#2 8.52 112.11- 99.86 12.25 ✓

3-47⁵⁰

#1 5.55 115.08- 102.18 12.90 ✓

#2 3.00 117.63- 104.50 13.13 ✓

#3 2.86 117.77- 106.82 10.95 ✓

2-32⁵⁰

#1 2.63 118.00- 108.41 9.59 ✓

~ #141 & Jarvis 1.87 118.76- 110.00 8.76 ✓

TP 10.07 118.07 12.63 108.00

Check back to M.H #140 12.37 105.70 ✓

110.09
0.73
110.82
4.22
106.60
96.80
9.80

106.60
110.82
8.80
107.42
97.35
8.72

108.20 W.

Keats Street from Mn. Hole #10
Main Interceptor & Scott to Mn. Hole #134
& Willow

	+	HI	-	Elev Stake	Elev flow Line	Cut
Mn. Hole 0+60 #10 5-41 ⁵⁰	10.20	10.17		-0.03	-3.18 -2.85	3.15 2.82 ✓
#1			9.57	0.60	-2.56	3.16 ✓
#2			9.08	1.09	-2.27	3.36 ✓
#3			8.55	1.62	-1.98	3.60 ✓
#4			7.63	2.54	-1.69	4.23 ✓
Mn. Hole #5 #130 5-41 ⁴⁰			7.11	3.06	-1.40	4.46 ✓
#1			5.59	4.58	-1.11	5.69 ✓
#2			5.05	5.12	-0.82	5.94 ✓
#3			4.55	5.62	-0.53	6.15 ✓
#4			4.81	5.36	-0.24	5.50 ✓
#5 Mn. Hole #131 5-44 ⁴⁴ Tied in paving to 120			4.11	6.06	+0.05	6.01 ✓
#1	7.41	16.00	1.58	8.59	0.80	7.79 ✓
#2			6.91	9.09	1.56	7.53 ✓
#3			6.18	9.82	2.31	7.51 ✓
#4			5.27	10.73	3.07	7.66 ✓
#5			5.17	10.83	3.82	7.01 ✓
#6			4.71	11.29	4.58	6.71 ✓
#7			4.01	11.99	5.33	6.66 ✓
Mn. Hole #8 #132 & broadcast 7-52 ⁵⁵			2.92	13.08	6.09	6.99 ✓
#1			2.18	13.82	7.52	6.30 ✓

	+	H.I. 16.00	-	Elev Stake	Elev flow Line	cut
#2	11.37	26.17	1.20	14.80	8.95	5.85 ✓
#3			10.15	16.02	70.38	5.64 ✓
#4			8.38	17.79	11.81	5.98 ✓
#5			6.28	19.89	13.23	6.66 ✓
#6			4.70	21.47	14.65	6.82 ✓
#7	Mn. Hole #133	to Evergreen	2.70	23.47	16.08	7.39 ✓
	7-52.85 T.P.	13.10	37.68	1.59	24.58	
#1			11.07	26.61	18.94	7.67 ✓
#2			6.59	31.09	21.79	9.30 ✓
#3			4.72	32.96	24.65	8.31 ✓
#4			3.10	34.58	27.50	7.08 ✓
#5	9.81	47.20	0.29	37.39	30.35	7.04 ✓
#6			5.69	41.51	33.21	8.30 ✓
#7	Mn. Hole #134	to Willow	11.4	46.66	36.06	10.00 ✓
	Set 8M. 57.6 T.P.	#129	to Jarvis Willow	10.17	37.03	
Sewer Keats from Mn. Hole #140 to Plum West to D. End						
0100	Mn. Hole #140	to Plum	118.06	105.69	96.80	8.89 ✓
5-47.00						
#1			7.80	110.26	100.04	10.22 ✓
#2			6.67	111.39	103.28	8.11 ✓
#3			3.27	114.79	106.52	8.27 ✓
T.P.	8.55	125.90	0.71	117.35		

1.50
0.03
42.45
36.25

	+	H.I. 125.90	-	Elev Stake	Elev flow line	cut
#4			8.12	117.78	109.76	8.02 ✓
#5 D End			2.79	123.11	113.00	10.11 ✓

W

Sewer Rosecrans from Mn Hole

#131 to Keats N 145 to D End

	Mn Hole					
0100 #131	5.44	11.50		6.06	+0.05	6.01 ✓
4-36 ²⁵						
#1			5.09	6.44	0.41	6.03 ✓
#2			4.91	6.59	0.77	5.82 ✓
#3			4.73	6.77	1.13	5.64 ✓
#4 D End			4.56	6.94	7.50	5.44 ✓

N

Sewer Jarvis Street from Mn. Hole
9. South St NW to Willow St

	H.I.	-	Elev Stake	Elev flow line	cut
Mn. Hole 0400 #9 5-41-50	10.79	11.26	+0.47	-3.59 -3.26	4.06- 3.73-
#1			10.71 +0.55	-2.97	3.52-
#2			10.51 +0.75	-2.68	3.43-
#3			9.99 1.27	-2.39	3.66-
#4			9.69 1.57	-2.10	3.67-
Mn. Hole #5 #125 5-41-40			9.35 1.91	-1.81	3.72-
#1			8.93 2.33	-1.52	3.85-
#2			8.49 2.77	-1.23	4.00-
#3			7.92 3.34	-0.94	4.28-
#4			6.99 4.27	-0.65	4.92-
Mn. Hole #5 #126 8-9-44			7.24 4.02	-0.36	4.38-
#1			5.44 5.82	+0.13	5.69-
#2			4.81 6.45	+0.62	5.83-
#3	8.35	15.10	4.51 6.75	+1.11	5.64-
#4			7.90 7.20	-1.60	5.60-
#5			7.08 8.02	2.09	5.93-
#6			6.46 8.64	2.58	6.06-
#7			5.47 9.63	3.07	6.56-
Mn. Hole #8 #127 & Locust 7-52-85			4.48 10.62	3.55	7.07-
#1			3.26 11.84	5.19	6.65-

	+	H.I. 15.10	-	Elev Stake	Elev flow Line	cut
#2			2.01	13.09	-6.83	6.26 ✓
#3	10.97	25.55	0.52	14.58	8.47	6.11 ✓
#4			9.50	16.05	-10.11	5.94 ✓
#5			8.49	17.06	11.75	5.31 ✓
#6			4.30	21.25	-13.39	7.86 ✓
#7 Mn Hole #128 7-52.85	1/82 to Eyergreen	35.84	1.53	24.02	15.02	9.00 ✓
#1			9.80	26.04	77.21	8.83 ✓
#2			7.55	28.29	19.52	8.77 ✓
#3			5.47	30.37	21.77	8.60 ✓
#4			3.87	31.97	24.02	7.95 ✓
#5			2.38	33.46	26.27	7.19 ✓
TP	12.79	47.20	1.43	34.41		
#6			10.04	37.16	28.53	8.63 ✓
#7 Mn Hole 129			10.17	37.03	30.79	8.24 ✓

✓
Server Rosecrans St from Mn Hole #126

to D. End N. East

Mn Hole ctoo #126 4-36.25	5.89	9.91		4.02	-0.36	4.38 ✓
#1			5.53	4.38	-0.11	4.49 ✓
#2			5.30	4.61	+0.14	4.47 ✓
#3			5.04	4.87	+0.39	4.48 ✓
#4 D. End			4.79	5.12	+0.65	4.47 ✓

✓

Sewer Ingeelow from Mn Hole #8
 & Scott NW to Mn Hole #120 NW of Plum

	+	H.I.	-	Elev Stake	Elev flow line	Cut
Mn Hole # 0400 # 8	5.56	5.06		-0.50	3.99 3.69	3.49 3.16
#5-91 50						
#1			5.54	-0.48	3.49	3.41
#2			5.23	-0.17	3.33	3.16
#3			5.18	-0.12	3.16	3.04
#4			5.15	-0.09	3.00	2.93
#5 Mn Hole #118 #5-91 40			4.91	+0.15	-2.83	2.98
#1			4.66	+0.40	-2.66	3.06
#2			4.12	+0.94	-2.50	3.44
#3			3.18	1.58	-2.33	4.21
#4	9.74	10.99	3.86	1.20	-2.17	3.37
Mn Hole #5 #119 #8-94 24 Rosserans			9.31	1.68	-2.00	3.68
#1			6.11	4.88	-1.24	6.12
#2			6.86	4.13	-0.99	4.62
#3			5.72	5.27	+0.26	5.01
#4			4.60	6.39	1.02	5.37
#5			3.94	7.55	1.77	5.78
#6			2.15	8.84	2.53	6.31
#7 Mn Hole	13.10	23.20	0.89	10.10	3.28	6.82
#8 #120 to Locust 7-52 85			11.85	11.35	4.04	7.51
#1			10.34	12.86	6.10	6.76
#2			8.86	14.39	8.16	6.18

	+	HZ	-	Elev Stake	Elev flow line	Cut	
		23.20					
#3			5.98	17.72	10.22	7.50	
#4			3.33	19.87	12.28	7.59	
#5	TP	12.39	35.33	1.57 0.26	21.63 22.94	1.434	7.29
#6			11.98	23.35	16.40		6.95
#7	Mn Hole #121 E Evergreen		8.49	26.89	18.47		8.37
#1			6.74	28.59	20.85		7.74
#2			4.13	31.20	23.23		7.97
#3	TP	9.40	44.17	1.82 0.56	33.51 34.77	25.61	7.90
#4			8.32	35.85	27.99		7.86
#5			5.83	38.34	30.37		7.97
#6			3.88	40.29	32.75		7.54
#7	Mn Hole #122 E Willow	13.26 Δ 8°-14'-00" R	54.17	3.26	40.91	35.12	5.79
#1			7.49	46.68	37.90		8.78
							10' No. $\frac{11.85}{11.85}$ 0.00
#2			5.52	48.65	40.69		7.96
							7.90 7.96 0.06 10' No.
#3			4.25	49.92	43.47		6.45
TP	11.34	64.86	0.65	53.52		6.29	10' No. $\frac{8.73}{8.62}$ 0.16
#4			9.98	54.88	46.26		8.62
							9.70 $\frac{3.66}{2.52}$ 1.08 10' No.
#5	Mn Hole #123 C-40-38	Δ 14°-47'-00" R	6.35	58.51	49.04		9.47
							10' 820' No.
#1			6.10	58.76	50.86		7.90
							9.86 $\frac{3.76}{1.52}$ 1.96 10' No.

	+	HI	-	Elev. Sero	Elev flow Line	cut			
		64.86							
#1	TP	10.78	43.74	3.06	61.80	52.68	9.12	10.59	10' No.
#3				1.90	62.96				
#4				7.30	66.44	59.56	11.88	13.94	10' No.
#5				10.19	63.55	56.32	7.23	7.99	10' No.
#5	Mn Hole			8.38	65.36	58.14	7.22		10' No.
#6 #124				6.45	67.29	59.96	7.33		10' 220' No.

10.43
8.96
7.47
5.79
4.73
2.06
8.70
7.94
0.76

63.55
8.75
78.25
6.89
65.36
58.14
7.22

TP	1.20	62.42	12.52	61.22					
TP	1.15	50.60	12.97	49.45					
TP	4.68	43.64	11.64	38.96					
			6.63	37.01					
				37.03					
				0.02					

V
Sewer Rosecrons from Mn Hole

#	to D End North 145					
#100 #119	M. Hole	5.50	6.18	+1.68	-2.00	3.68 ✓
#3-48 ³³						
#1			5.18	+1.00	-1.67	2.67 ✓
#2			4.72	+1.46	-1.33	2.79 ✓
#3 D End			4.20	+1.98	-0.99	2.97 ✓

X
Sewer Hugo from Mn Hole #7
Main Interceptor N. West to M.H #117 & clove
+ H.I. - Ekvstake Ekv flow
line cut

Mn Hole 0700 #7 4-43 ⁵	6.96	4.88		- 2.08	- 4.37	2.29
#1		6.16		- 1.28	- 4.15	2.87
#2		6.09		- 1.21	- 3.92	2.71
#3 1-4 ⁴⁰ Mn Hole		5.97		- 1.09	- 3.70	2.61
#4 #108 1-38		5.77		- 0.89	- 3.47	2.58
#1 3-41 ⁴⁰		5.22		- 0.34	- 3.28	2.94
#1		4.60		+ 0.28	- 3.06	3.34
#2		4.02		+ 0.86	- 2.85	3.71
#3 1-4 ⁴⁰ Mn Hole		3.22		+ 1.66	- 2.64	4.30
#5 #100 Pascrans		3.98		+ 0.90	- 2.41	3.31
8-44 ⁴⁴						
#1	9.40	13.49	0.79	4.09	- 1.48	5.67
#2			7.21	4.28	- 0.55	5.03
#3			8.36	5.13	+ 0.38	5.05
#4			7.22	6.27	+ 1.31	4.96
#5			5.92	7.57	- 2.24	5.33
#6			4.35	9.14	- 3.17	5.97
#7			3.18	10.31	- 4.10	6.21
Mn Hole #8 #110 & Locast			2.33	11.16	- 5.05	6.11
7-52 ⁸⁵						
#1	11.56	24.76	0.29	13.20	7.27	5.93

		H.I. 2476	-	Elev stone	Elev flow line	cut			
#2			8.40	16.36	9.49	6.87			
#3			6.09	18.67	11.71	6.96			
#4			4.23	20.53	13.93	6.60			
#5			2.48	22.28	16.15	6.13			
#6	M.H.	11.24	35.89	0.11	24.65	18.37	6.28		
#7	#111 & Evergreen		9.66	26.23	20.59	5.64			
4-52 ⁵⁰									
#1			8.00	27.89	22.80	5.09			
#2			5.83	30.06	25.00	5.06			
#3			3.72	32.17	27.20	4.97			
#4	M.H.		1.60	34.29	29.41	4.88			
4-52 ⁵⁰	T.P.	12.26	47.75	0.40	35.49				
#1			10.68	37.07	31.61	5.46			
#2			7.39	40.36	33.82	6.54			
#3			4.54	43.21	36.03	7.18			
#4	M.H. & #113	12.82	59.16	1.41	46.34	13.51			
3-45	T.P.	12.82	71.73	0.25	58.91				10' 20' 30
#1			6.62	65.11	54.79	10.32	10.70	10' 50	6.95 6.57 0.38
T.P.	12.87	83.87	0.75	71.00					
#2			5.25	78.62	71.35	7.27	9.48	10' 50	8.72 8.21
T.P.	12.83	95.99	0.71	83.16					
#3	M.H. & #114		2.99	93.00	87.91	5.09			10' 20' 50
4-46 ²⁵	T.P.	13.08	108.41	0.66	95.33				

	+	H.I.		Elev Stake	Elev flowline	cut			
		108.41							
#1			5.49	102.92	90.82	12.10-	11.95	10' 50	$\frac{11.09}{10.94}$ 0.15
#2	9.07	117.13	0.35	108.06	93.74	14.32-	14.57	10' 50	$\frac{5.80}{5.50}$ 0.28
#3			6.31	110.82	96.65	14.17-		10' 50.	$\frac{3.04}{3.03}$ 0.01
#4 #115			4.87	112.26	99.57	12.69-		10' 22' 50	
	6-40	83							
#1			4.92	112.21	100.98	11.23-		10' 50	
#2			5.38	111.75	102.40	9.35-		10' 50.	$\frac{6.10}{5.83}$
#3			6.83	110.30	103.81	6.49-	6.22	10' 50.	0.27
#4			5.96	111.17	105.22	5.95-		10' 50.	
#5			3.83	113.30	106.64	6.66-	6.89	10' 50.	$\frac{2.82}{2.64}$ 0.18
	M.H. Hole	13.17	1.00	116.13					
#6 #116			12.18	117.12	108.05	9.07-		10' 22' 50.	
	3-41	66							
#1			6.31	122.99	113.86	9.13-	8.55	10' 50.	$\frac{7.98}{7.40}$ 0.58
#2	8.65	136.43	1.52	127.78	119.67	8.11-		10' 50	
#3 #117			3.46	132.97	125.47	7.50-			
	M.H. Hole								
TP.	2.55	129.66	9.32	127.11					
Check D End Fenelon			2.43	127.23					

✓
Sewer Rosecrans Street
from M.Hole # 109 ✓ 145' N. East

63

0100 ^{M.H.} Hole # 109	536	6.26	+0.90	-2.41	3.31 ✓
3-48 ³³					
#1	534		+0.92	-2.07	2.99 ✓
#2	520		+1.06	-1.73	2.79 ✓
#3 D.End	510		+1.16	-1.40	2.56 ✓

✓
Sewer Rosecrans St from M.H.

#100 145' North to D.End

0100 M.H. #100	628	6.61	+0.33	-3.20	3.53 ✓
3-48 ³³					
#1	618		+0.45	-2.86	3.29 ✓
#2	607		+0.54	-2.52	3.06 ✓
#3 D.End	595		+0.66	-2.19	2.85 ✓

✓
Sewer Rosecrans M.Hole #90 145'

N to D.End.

0100 ^{M.H.} #90	536	6.79	1.43	-3.55	4.98 ✓
3-48 ³³					
#1	546		1.33	-3.21	4.54 ✓
#2	570		1.09	-2.87	3.96 ✓
#3 D.End	595		0.84	-2.54	3.38 ✓
Check	642		0.37		

W
Sewer Carrison Street #6
Main Interceptor to D. End. West of Clove.

Mn Hole						
Of 00 # 6. 7-4055	5.87	4.23		-1.64	-4.78	3.14
#1		5.42		-1.19	-4.55	3.36
#2		5.28		-1.05	-4.32	3.27
#3		5.56		-1.33	-4.10	2.77
#4		4.52		-0.29	-3.87	3.58
#5		4.04		+0.19	-3.65	3.84
#6		4.43		-0.20	-3.42	3.22
#7 Mn Hole 205 E. of #100 of Rosecrans 8-4444		3.90		+0.33	-3.20	3.53 ✓
#1	6.74	8.90	2.07	2.16	-2.31	4.97 ✓
#2			5.64	3.26	-1.42	4.68 ✓
#3			4.58	4.32	-0.53	4.85 ✓
#4	7.84 9.16	13.44	3.30	5.60	+0.36	5.24 ✓
#5			6.41	6.91	+1.25	5.66 5.78 ✓
#6			5.23	8.10	+2.14	5.96 6.07 ✓
#7			3.88	9.44	+3.03	6.41 6.53 ✓
#8 Mn Hole #101 of Locust 7-4857			2.48	10.84	+3.91	6.93 7.05 ✓
#1			1.30	12.14 12.02 12.99	6.05	6.09 ✓
#2	11.30	25.49	0.45	14.19	8.12	6.01 4.81 ✓
#3			8.61	16.88	10.32	6.56 ✓
#4			6.11	19.38	12.46	6.92 ✓
#5			3.55	21.94	14.59	7.35 ✓

560
224
1344

89

Fix This

	+	HZ 25.49	-	Elev Stake	Elev flow line	cut
#6	1136	35.92	0.93	24.56	16.73	7.83 ✓
Mn Hole #7 #102	E. ingress		876	27.16	18.87	8.29 ✓
6-40 ⁸³						
#1			7.72	28.20	21.56	6.64 ✓
#2			6.14	29.78	24.25	5.53 ✓
#3			3.95	31.97	26.94	5.03 ✓
#4	12.08	47.02	0.98	34.94	29.63	5.31 ✓
#5			8.98	38.04	32.32	5.72 ✓
Mn Hole #6 #103			6.16	40.86	35.01	5.85 ✓
4-46 ²⁵						
#1			2.54	44.48	37.50	6.98 ✓
TP	10.21	56.43	0.80	46.22		
#2			8.68	47.75	40.00	7.75 ✓
#3			6.53	49.90	42.50	7.40 ✓
Mn #4 Hole #104			5.03	51.40	45.00	6.40 ✓
7-44 ²⁹						
#1	12.62	68.12	0.93	55.50	49.91	5.59 ✓
#2			7.83	60.29	54.83	5.46 ✓
#3			2.77	65.35	59.75	5.60 ✓
TP	13.15	80.15	11	67.00		
#4			9.54	70.61	64.66	5.95 ✓
#5			4.34	75.81	69.58	6.23 ✓
TP	12.71	92.07	0.79	79.36		

	#	H.I.	-	Elev Spoke	Elev Flowline	cut
		92.07				
#6			11.05	81.02	74.50	6.52 ✓
Mn Hole	#7		6.58	85.49	79.41	6.08 ✓
2-30						
#1			5.45	86.62	79.98	6.64 ✓
Mn Hole	#2		4.19	87.88	80.55	7.33 ✓
#2			7.44			
#1			0.68	91.39	85.86	5.53 ✓
TP.	13.07	104.75	0.39	91.68		
#2			8.24	96.51	91.18	5.33 ✓
#3			2.62	102.13	96.49	5.64 ✓
TP	12.85	116.76	0.84	103.91		
#4			9.04	107.72	101.81	5.91 ✓
#5			3.75	113.01	107.12	5.89 ✓
TP.	12.96	129.66	0.06	116.70		
#6			11.03	118.63	112.43	6.20 ✓
8M. Set SW Top of Garrison Clove			7.21	122.45		
Mn Hole	#7		5.87	123.79	117.75	6.04 ✓
2-40						
#1			4.19	125.47	118.87	6.60 ✓
#2 D End			2.43	127.23	120.00	7.23 ✓

	Server Fenelon		from Manhole			
#	Main Interceptor to #2		D End of Glove Elev Stake	Elev flow Line	cut	
0100 ^{Manhole} #5	6.87	4.65	-2.22	-5.21	2.99-	
5-41-50						
#1		6.58	-1.93	-5.04	3.11-	
#2		6.29	-1.64	-4.88	3.24-	
#3		5.62	-0.97	-4.71	3.74-	
#4		5.07	-0.42	-4.55	4.13-	
#5 Man Hole # 89		4.77	-0.12	-4.38	4.26-	
5-41-40						
#1		4.07	+0.58	-4.21	4.79-	
#2		3.12	+1.53	-4.05	5.58-	
#3		2.13	2.52	-3.88	6.40-	
#4	10.22	12.00	2.87	1.78	-3.72	5.50-
#5 M Hole # 90	205 E of the W Line of Rosarians		10.57	1.43	-3.55	4.98 ✓
8-44-44						
#1		9.26	2.74	-2.53	5.27 ✓	
#2		8.26	3.74	-1.51	5.25 ✓	
#3		6.91	5.09	-0.49	5.58 ✓	
#4		5.49	6.51	+0.53	5.98 ✓	
#5		4.13	7.87	+1.55	6.32 ✓	
#6		2.79	9.21	-2.57	6.64 ✓	
#7		1.38	10.62	-3.60	7.02 ✓	
#8 ^{Man Hole} # 91	10.54	22.43	0.11	11.89	+4.63	7.26 ✓
4-50						
#1		9.35	13.08	-6.68	6.40 ✓	

	+	HI	-	Elev Stake	Elev flow line	cut
#2		22.43	7.90	14.53	8.73	5.80 ✓
#3			5.85	16.58	10.78	5.80 ✓
#4 #92			4.04	18.39	12.82	5.57 ✓
4-50						
#1			1.70	20.73	14.42	6.31 ✓
TP	10.47	32.65	0.25	22.18		
#2			10.00	22.65	16.02	6.63 ✓
#3			8.10	24.55	17.62	6.93 ✓
#4 M.H.#93			6.65	26.00	19.22	6.78 ✓
4-46 ²⁵						
#1			4.34	28.31	22.87	5.44 ✓
#2	11.83	43.75	0.73	31.92	26.53	5.39 ✓
#3			8.01	35.74	30.18	5.56 ✓
#4 M.H.#94			4.50	39.25	33.84	5.41 ✓
4-46 ²⁵						
#1	12.36	55.40	0.71	43.04	36.33	6.71 ✓
#2			8.41	46.99	38.83	8.16 ✓
#3			5.56	49.84	41.33	8.51 ✓
#4 M.H.#95			4.61	50.79	43.83	6.96 ✓

M.H.#95 5' E of 164
W. metal window

	+	H.I. 55.40	-	E/er Stake	E/er flow line	cut
#	7-44 ²⁹ TP	13.27	68.61	0.06	55.34	-
#	#1			12.26	56.35	50.61
#	#2			5.39	63.22	57.39
#	TP	13.14	81.45	0.30	68.31	
#	#3			11.28	70.17	64.17
#	#4			4.30	77.15	70.94
#	TP	13.05	94.23	0.27	81.18	
#	#5			10.14	84.09	77.71
#	#6			3.17	91.06	84.48
#	TP	12.52	106.43	0.32	93.91	
#	#7 #97 M. Hole 5' W of the E line of Plum			9.38	97.05	91.26
#	2-30					
#	#1			8.63	97.80	91.62
#	#2 #363 M.H. 5' East of the W line of Plum			7.72	98.71	91.98
#	7-44 ²⁹					
#	#1			2.90	103.53	97.51
#	TP	12.84	118.97	0.30	106.13	
#	#2			10.01	108.96	103.05
#	#3			4.43	114.54	108.59
#	TP	12.66	131.50	0.13	118.84	
#	#4			11.36	120.14	114.12

	+	H.I.	-	Elev Stake	Elev flow line	cut
		131.50				
#5			5.79	125.71	119.66	6.05 ✓
#6	8.6 ~	139.93	4.9 0.19	131.31	125.19	6.12 ✓
#7 #98	Min Hole 5' N of E Line of clove approx		3.92	136.01	130.73	5.28 ✓
2-40 #1			2.46	137.47	131.37	6.10 ✓
# ~ D End			0.49	139.44	132.01	7.43 ✓
check set on Min. Hole #117 to Clove + Hypo			6.84	133.09		
				132.97		
				0.12		

W

Sewer Willow St. from
 Mn. Hole # 95 Fenelon & Willow 45' South to
 D. End H.E. - Elev. Stake Elev. Floor
 Line

Mn. Hole	D. End	H.E.	-	Elev. Stake	Elev. Floor Line	cut
0100 #95	8.44	59.23		50.79	43.83	6.96 ✓
6-45						
#1			7.60	51.63	44.86	6.77 ✓ 6.57 Resol.
#2			6.19	53.04	45.90	7.14 ✓ ✓
#3			5.62	53.61	46.93	6.68 ✓
#4			4.38	54.85	47.97	6.88 ✓
#5			3.10	56.13	49.00	7.13 ✓
Mn. Hole #96 3-48 ³³	2.94	56.29	2.94	56.29	50.04	6.25 ✓
#1	10.82	69.31	0.74	58.49	53.04	5.45 ✓
#2			6.99	62.32	56.04	6.28 ✓
#3 D. End			2.82	66.49	59.03	7.46 ✓
TP	0.89	60.20	10.00	59.31		
check D. End Emerson			12.82	47.38		

W

Sewer Rosecrans #90 Mn. Hole 145' S. to D. End

Mn. Hole #90 3-48 ³³	5.36	6.79		1.43	-3.55	4.98 ✓
#1			5.25	1.54	-3.07	4.61 ✓
#2			4.75	2.04	-3.59	5.63 ✓
#3 D. End			4.26	2.53	-2.10	4.63 ✓

✓

Sewer Emerson from Mn. Hope
4 Main Interceptor to D. E. N. W. of Evergreen

	I	HI	-	El. Stake	El of Flow line	cut.
Mn. Hope #4 8:44.44	8.12	8.01		-0.11	-5.61	5.00
#1			6.57	1.44	-5.17	6.61
#2			6.05	1.96	-4.72	6.68
#3			5.97	2.04	-4.28	6.32
#4			5.70	2.31	-3.84	6.15
#5			5.04	2.97	-3.39	6.36
#6			4.43	3.58	-2.95	6.53
#7			3.21	4.80	-2.50	7.30
#8 #85			3.34	4.57	-2.06	6.56
2-29 ⁵⁰						
#1			3.28	4.73	-1.76	6.19
#2 #86			3.68	4.33	-1.46	5.79 ✓
8:44.44 TP	7.95	14.20	1.16	6.85		
#1			7.02	7.78	-1.62	3.40 ✓
#2			7.69	7.11	+0.23	6.88 ✓
#3			7.78	7.02	+1.07	5.95 ✓
#4			6.85	7.95	-1.92	6.03 ✓
#5			5.33	9.47	-2.76	6.81 ✓
#6			4.47	10.33	-3.60	6.73 ✓
#7			3.55	11.25	-4.45	6.70 ✓
#8 #87 2.4000!			2.83	11.97	-5.29	6.68 ✓
5-46 ²⁵						
#1			1.79	13.01	-6.40	6.61 ✓

See page 73
Exchange
on this stake

205 E of the
N line of Rosecrans

	#2 14.80	-	Elev store	Elev flowline	cut
#2	9.66	23.30	116	13.64 - 7.51	6.13 ✓
#3			906	14.24 - 8.62	5.62 ✓
#4			8.15	15.15 - 9.73	5.42 ✓
#5			6.70	16.60 - 10.84	5.76 ✓
#6			5.62	17.68 - 11.95	5.73 ✓
#7			4.18	19.12 - 13.06	6.06 ✓
#8 #88 to Evergreen 7-42 ¹⁴			2.79	20.51 - 14.17	6.34 ✓
#1	12.59	34.72	1.17	22.13 - 16.70	5.43 ✓
#2			10.72	24.00 - 19.23	4.77 ✓
#3			8.49	26.23 - 21.76	4.47 ✓
#4			5.94	28.78 - 24.29	4.49 ✓
#5			3.37	31.35 - 26.82	4.52 ✓
TP	13.18	47.68	0.22	34.50	
#6			10.08	37.60 - 29.35	8.25 ✓
#7 D. End			0.32	47.36 - 31.87	15.49 ✓

✓

Sewer Rosecrans from E. Emerson
145' S.W. to D. End North West Side of Rosecrans

374
24

206
61
145

73

M.H. 0400 #86 3-48 33	6.06	10.39	4.33	-1.46	5.79 ✓
#1		5.30	5.09	-1.21	6.30 ✓
#2		4.46	5.93	-0.96	6.89 ✓
#3 D. End		3.87	6.52	-0.72	7.24 ✓

✓

Sewer Rosecrans E Side Rosecrans

E. Emerson M.H. #85 145' S.W. to D. End

M.H. 0400 #85 3-48 33		5.89	4.50	-2.06	6.56 ✓	10220 No.
#1		3.90	6.49	-1.59	8.07 ✓	
#2		3.93	6.46	-1.10	7.57 ✓	
#3 D. End		3.03	7.36	-0.61	7.97 ✓	

Sewer Rosecrans NW Side

from M.H. #75 & Dickens 145' S.W. to D. End

(See Page 77)

M.H.
0400 #75
3-48 33
#1
#2
#3 D. End

W

Sewer Dickens from M. Hole
#3. Main Interceptor & Scott to M. Hole # 84 &
of Clove

M.H 0700 #3 5-41-50	9.44	12.32	2.88	-6.02 -2.00	8.90 4.88	
#1		8.40	3.92	-1.58	5.50	
#2		7.67	4.65	-1.17	5.82	
#3		6.87	5.45	-0.75	6.20	
#4		6.03	5.29	-0.34	6.63	
M.H #5 #74 5-41-50		5.23	7.99	+0.08	7.01	
#1		4.73	7.59	+0.50	7.09	
#2		3.19	9.16	0.91	8.25	
#3 -1-33-40		3.23	9.09	1.33	7.76	
#4 -1-44-40		3.29	9.03	1.74	7.29	
M. Hole 205 B W line of #5 #75 8-44-40 Rascrons		3.47	8.85	2.15	6.70	
#1	8.50	19.48	1.34	10.98	2.77	8.21 ✓
#2			8.88	10.60	3.39	7.21 ✓
#3			8.03	11.45	4.01	7.44 ✓
#4			7.62	11.86	4.64	7.22 ✓
#5			6.83	12.65	5.26	7.39 ✓
#6			5.65	13.83	5.89	7.94 ✓
#7			4.50	14.98	6.51	8.47 ✓
M. Hole to #8 #76 7-52-85 Lilooost			3.79	15.69	7.13	8.56 ✓
#1			2.64	16.84	7.87	8.97 ✓

	+ H.Z. 19.48	-	Elev. Stake	Elev. from line	cut	
#2		1.63	17.85	8.61	9.24	
#3		1.41	18.07	9.35	8.72 ✓	
#4	8.67	26.72	1.93	18.05	10.09	7.96 ✓
#5		8.50	18.22	10.83		7.39 ✓
#6		7.44	19.28	11.57		7.71 ✓
#7	M.H. 1/2 #77 E. Evergreen	5.91	20.81	12.31		8.50 ✓
5-44 ⁰⁰						
#1		3.82	22.90	15.81		7.09 ✓
#2	12.68	38.34	1.06	25.66	19.31	6.35-
#3		9.19	29.15	22.81		6.34 ✓
#4		5.37	32.97	26.31		6.66 ✓
TP	12.87	50.91	0.30	38.04		
#5	M.H. 1/2 #78		9.17	41.74	29.81	11.93-
3-39 ²⁷	12.94	63.39	0.46	50.45		
#1		11.48	51.91	41.21		10.70 - 10' 5
#2	13.13	75.65	0.87	62.52	52.61	9.91 ✓ 10' 5
#3	M.H. 2.5' W of #79 E. Pine Hilltop		2.83	72.82	64.00	8.82-
2-32 ⁵⁰						
#1		1.45	74.20	66.50		7.70-
M.H. TP	12.47	87.91	0.21	75.44		
#2	#80 2.5 E of W. Pine Hilltop	12.22	75.69	69.00		6.69-

	+	H.I.	-	Ek. Stake	Elevation	Cut	
		87.91					
3-50 83							
TP	12.72	100.37	0.26	87.65		12.64	99.11 13.22
#1			12.26	88.11	77.03	11.08	19.5 11.24
#2	12.71	112.29	0.79	99.58	85.06	14.52	15.07 - 105. 87.67 77.03 12.64
#3 M.Hole							
#81 Tied 10020 S.			4.64	107.65	93.10	14.55	
4-46 25							
#1			3.22	109.07	97.72	11.35	12.72 10'S 6.25 4.75 1.50
#2			3.98	108.31	102.35	5.96	7.81 10'S 1.85
#3	13.08	122.92	2.45	109.84	106.97	2.87	3.19 10'S 5.47 0.15 0.32
#4 M.Hole & Plum.							
#82			4.10	118.82	111.60	7.22	
4-46 25 Tied 10020 X							
TP	11.07	133.44	0.55	122.37			
#1			8.84	124.60	116.69	7.91	6'S
TP	12.79	146.06	0.17	133.27			
#2			12.93	133.13	121.78	11.35	10'S 15.10
#3			7.08	138.98	126.87	12.11	11.91 10'S 7.25 7.45 0.20
#4 M.Hole							
#83	12.66	156.52	2.20	143.86	131.95	11.97	11.91 10 & 20'S
4-46 25							
#1			18.25	148.27	135.77	12.50	12.30 10'S
#2			4.85	151.67	139.49	12.18	10'S

99.58
1.53
101.11
1.97
100.13
25.01
75.08

12/78
12/35
13312
76

	HI.	-	Elev Stake	Elev Flow Line	cut
--	-----	---	------------	----------------	-----

#3		2.35	154.17	143.21	10.96	10.83	10'5	$\begin{array}{r} 3.25 \\ 3.36 \\ \hline 0.13 \end{array}$
M.Hole #84 #4 #84 to Close		117	155.35	146.93	8.42		10.9205	
			$\begin{array}{r} 155.34 \\ \hline 0.01 \end{array}$					

Sewer Rosecrans from Mn. Hole #75 to

$$\begin{array}{r} 4.76 \\ 2.10 \\ \hline 2.66 \\ 3 \overline{) 2.66} \\ \underline{2.10} \\ 0.56 \\ \underline{0.56} \\ 0.00 \end{array}$$

Dickens 145' S. to D. End

M.H. #75 0400 #75	6.99	15.84	8.85	7.2.15	6.70	✓
3-48 33						
#1	6.17		9.67	3.02	6.65	✓
#2	5.32		10.52	3.89	6.63	✓
#3 D. End	4.26		11.58	4.76	6.82	✓

Grades for Piers 5' South of

Mn Hole #6 10' on ctrs.

			Elev stone	Elev flow line
B.M. M.H. 5	5.01	+ 3.37	- 1.64	- 8.00
Pier #1		470		- 4.79
Pier #2		471		- 8.00
check stone		468	1.31	- 4.82
		488	1.51	

void
stakes Reset

See Page Book 161

See page 26
This Book

→ Sewer Extension Alley Block

8. Pt Loma Heights from D. End 125' South West

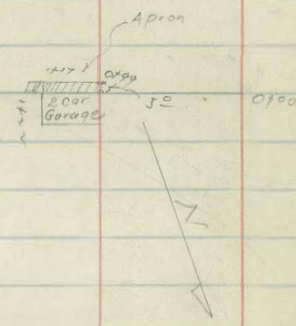
0700 = Old D. End	12.51	no	56	108.05	99.54
					8.51
341.67					
#1		788	112.68	104.00	8.68
#2		5.20	115.36	108.46	6.90
#3 D. End		1.63	118.93	112.91	6.02

Levels Along the E of Oliphant
from the E line of Willow 1.65' East

B.M. NW 8P	1.06	153.71		152.65	Willow	Oliphant
0+00 <small>5 line Willow on paving</small>			2.60			
0+03			2.6			
0+16			4.4			
0+40			5.3			
0+85			9.3			
T.P.	1.98	142.86	12.83	140.88		
0+87			3.3			
0+99. XX End 2 Car Garage			3.42			
1+05			4.5			
1+17 E end 2 Car Garage			3.49			
1+22 " " Apron			3.55			
1+28			5.0			
1+38			5.0			
1+50			11.5	131.36		
1+65			15.4			
check Mn. Hob Tie out 155			4.13	138.73		
				138.70		
				0.03		

Oliphant

st



Willow

st

0+00

15.92
 2.11
 13.31

15.92
 2.11
 13.36

18.41
 508
 13.33

18.41
 13.47

17.94
 15.92
 1.95

TABLE No. 1.
 Distance of slope stake from side or shoulder
 of any width roadway, slope 1 N to 1.
 If ground is not level, the cut or fill at site
 stake is located by the double entry method in
 left column and top row. The number in body
 of table is the distance from side stake to
 from side stake to slope stake. If ground is not
 level, the distance from side stake to slope stake
 is the sum of the distance from side stake to
 amount if cut, elevate if fill. Add this amount
 to cut or fill and find in table. Set up
 rod at this point and line of sight should cut
 target.

IMPROVED TABLES AND INFORMATION

TABLE No. 2.
 To find Tangent and External for curve of
 any other degree, divide by degree of curve and
 add correction found in column of correction.
 Degree of curve with a given T may be found
 by dividing tangent (or external), opposite T by
 given tangent (or external).
 The distance from a point on the tangent to
 the curve is very nearly the square of the tangent
 length divided by twice the radius.

DIRECTIONS FOR USE OF TABLES

TABLE No. 1.

Distance of slope stake from side or shoulder stake for any width roadway, slope $1\frac{1}{2}$ to 1. If ground is nearly level, the cut or fill at side stake is located by the double entry method in left column and top row. The number in body of table in same row and column gives distance from side stake to slope stake. If ground is not level estimate the difference in elevation between the side stake and slope stake, lower target by this amount if cut, elevate if fill. Add this amount to cut or fill and find distance in table. Set up rod at this point, and line of sight should cut target. If it does not make the slight adjustment necessary.

TABLE No. 9.

To find Tangent and External for curve of any other degree, divide by degree of curve and add correction found in column of corrections.

Degree of curve with a given I may be found by dividing tangent, (or external), opposite I by given tangent, (or external).

The distance from a point on the tangent to the curve is very nearly the square of the tangent length divided by twice the radius.

TABLE II
TRIGONOMETRIC FORMULAE

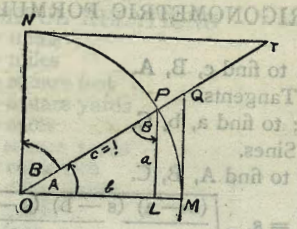


TABLE II

TRIGONOMETRIC FORMULAE

$\angle A = \angle MOP$ $\angle B = \angle PON = \angle OPL$
 $R = OB = c = 1$
 $\sin A = \frac{a}{c} = \frac{a}{1} = a = \cos B = LP$
 $\cos A = \frac{b}{c} = \frac{b}{1} = b = \sin B = OL$
 $\tan A = \frac{a}{b} = \frac{MQ}{OM} = \frac{MQ}{1} = MQ = \cot B = \frac{OL}{OP}$
 $\cot A = \frac{NT}{ON} = \frac{NT}{1} = NT = \tan B = \frac{OL}{OP}$
 $\sec A = \frac{OQ}{OM} = \frac{OQ}{1} = OQ = \csc B = \frac{OQ}{OL}$
 $\csc A = \frac{OT}{ON} = \frac{OT}{1} = OT = \sec B = \frac{OT}{OL}$
 $\text{vers } A = \frac{LM}{OP} = LM = \text{covers } B$

$\text{covers } A = \frac{OP - LP}{OP} = OP - LP = \text{vers } B$	
$\text{exsec } A = PQ = \text{coexsec } B$	
$\text{coexsec } A = PT = \text{exsec } B$	
$\sin \frac{1}{2} A = \sqrt{\frac{1 - \cos A}{2}}$	$\cos \frac{1}{2} A = \sqrt{\frac{1 + \cos A}{2}}$
$\sin 2A = 2 \sin A \cos A$	$\cos 2A = \cos^2 A - \sin^2 A$
Law of Sines $\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$	
Law of Cosines $c^2 = a^2 + b^2 - 2ab \cos C$	
Law of Tangents $\frac{a+b}{a-b} = \frac{\tan \frac{1}{2}(A+B)}{\tan \frac{1}{2}(A-B)}$	

TABLE IX. TANGENTS AND EXTERNALS TO A 1° CURVE

I	T	E	I=10°	I	T	E	I=20°	I	T	E	I=30°
1°	50.00	.218	+	11°	551.70	26.500	+	21°	1061.9	97.577	+
10°	58.34	.297	5° C.	10°	560.11	27.313	5° C.	10°	1070.6	99.155	5° C.
20°	66.87	.388	T	20°	568.53	28.137	T	20°	1079.2	100.75	T
30°	75.01	.491	.03	30°	576.95	28.974	.06	30°	1087.8	102.35	.10
40°	83.34	.606	E	40°	585.36	29.824	E	40°	1096.4	103.97	E
50°	91.68	.733	E	50°	593.79	30.686	E	50°	1105.1	105.60	E
2°	100.01	.873	.001	12°	602.21	31.561	.006	22°	1113.7	107.24	.013
10°	108.35	1.024		10°	610.64	32.447		10°	1122.4	108.90	
20°	116.68	1.188		20°	619.07	33.347		20°	1131.0	110.57	
30°	125.02	1.364		30°	627.50	34.259		30°	1139.7	112.25	
40°	133.36	1.552		40°	635.93	35.183		40°	1148.4	113.95	
50°	141.70	1.752		50°	644.37	36.120		50°	1157.0	115.66	
3°	150.04	1.964	10° C.	13°	652.81	37.070	10° C.	23°	1165.7	117.38	10° C.
10°	158.38	2.188	T	10°	661.25	38.031	T	10°	1174.4	119.12	T
20°	166.72	2.425	.06	20°	669.70	39.006	.13	20°	1183.1	120.87	.19
30°	175.06	2.674	E	30°	678.15	39.993	E	30°	1191.8	122.63	E
40°	183.40	2.934	E	40°	686.60	40.992	E	40°	1200.5	124.41	E
50°	191.74	3.207	.003	50°	695.06	42.004	.011	50°	1209.2	126.20	.025
4°	200.08	3.492		14°	703.51	43.029		24°	1217.9	128.00	
10°	208.43	3.790		10°	711.97	44.066		10°	1226.6	129.82	
20°	216.77	4.099		20°	720.44	45.116		20°	1235.3	131.65	
30°	225.12	4.421		30°	728.90	46.178		30°	1244.0	133.50	
40°	233.47	4.755		40°	737.37	47.253		40°	1252.8	135.35	
50°	241.81	5.100		50°	745.85	48.341		50°	1261.5	137.23	
5°	250.16	5.459	T	15°	754.32	49.441	T	25°	1270.2	139.11	T
10°	258.51	5.829	.09	10°	762.80	50.554	.19	10°	1279.0	141.01	.29
20°	266.86	6.211	E	20°	771.29	51.679	E	20°	1287.7	142.93	E
30°	275.21	6.606	.004	30°	779.77	52.818	.017	30°	1296.5	144.85	.038
40°	283.57	7.013		40°	788.26	53.969		40°	1305.3	146.79	
50°	291.92	7.432		50°	796.75	55.132		50°	1314.0	148.75	
6°	300.28	7.863		16°	805.25	56.309		26°	1322.8	150.71	
10°	308.64	8.307		10°	813.75	57.498		10°	1331.6	152.69	
20°	316.99	8.762		20°	822.25	58.699		20°	1340.4	154.69	
30°	325.35	9.230		30°	830.76	59.914		30°	1349.2	156.70	
40°	333.71	9.710		40°	839.27	61.141		40°	1358.0	158.72	
50°	342.08	10.202		50°	847.78	62.381		50°	1366.8	160.76	
7°	350.44	10.707	.13	17°	856.30	63.634	.26	27°	1375.6	162.81	.39
10°	358.81	11.224	E	10°	864.82	64.900	E	10°	1384.4	164.86	E
20°	367.17	11.753	.006	20°	873.35	66.178	.022	20°	1393.2	166.95	.051
30°	375.54	12.294		30°	881.88	67.470		30°	1402.0	169.04	
40°	383.91	12.847		40°	890.41	68.774		40°	1410.9	171.15	
50°	392.28	13.413		50°	898.95	70.091		50°	1419.7	173.27	
8°	400.66	13.991		18°	907.49	71.421		28°	1428.6	175.41	
10°	409.03	14.582		10°	916.03	72.764		10°	1437.4	177.55	
20°	417.41	15.184		20°	924.58	74.119		20°	1446.3	179.72	
30°	425.79	15.799		30°	933.13	75.488		30°	1455.1	181.89	
40°	434.17	16.426		40°	941.69	76.869		40°	1464.0	184.08	
50°	442.55	17.065		50°	950.25	78.264		50°	1472.9	186.29	
9°	450.93	17.717	.007	19°	958.81	79.671	.028	29°	1481.8	188.51	.065
10°	459.32	18.381		10°	967.38	81.092		10°	1490.7	190.74	
20°	467.71	19.058		20°	975.96	82.525		20°	1499.6	192.99	
30°	476.10	19.746		30°	984.53	83.972		30°	1508.5	195.25	
40°	484.49	20.447		40°	993.12	85.431		40°	1517.4	197.53	
50°	492.88	21.161		50°	1001.7	86.904		50°	1526.3	199.82	
10°	501.28	21.887		30° C.	1010.3	88.389		30° C.	1535.3	202.12	
10°	509.68	22.624	T	10°	1018.9	89.888	T	10°	1544.2	204.44	T
20°	518.08	23.375	.19	20°	1027.5	91.399	.39	20°	1553.1	206.77	.59
30°	526.48	24.138	E	30°	1036.1	92.924	E	30°	1562.1	209.12	E
40°	534.89	24.913		40°	1044.7	94.462		40°	1571.0	211.48	
50°	543.29	25.700	.008	50°	1053.3	96.013	.034	50°	1580.0	213.86	.078

T = R tan ½ I

E = R exsec ½ I

TABLE IX. TANGENTS AND EXTERNALS TO A 1° CURVE

79.98
80.55
80.55

80.55
79.41
271.74 57

I	T	E	I=40°	I	T	E	I=50°	I	T	E	I=60°
31°	1589.0	216.3	+	41°	2142.2	387.4	+	51°	2732.9	618.4	+
10°	1598.0	218.7	5° C.	10°	2151.7	390.7	5° C.	10°	2743.1	622.8	5° C.
20°	1606.9	221.1	T	20°	2161.2	394.1	T	20°	2753.4	627.2	T
30°	1615.9	223.5	.13	30°	2170.8	397.4	.17	30°	2763.7	631.7	.21
40°	1624.9	226.0	E	40°	2180.3	400.8	E	40°	2773.9	636.2	E
50°	1633.9	228.4	.023	50°	2189.9	404.2	.037	50°	2784.2	640.7	.056
32°	1643.0	230.9		42°	2199.4	407.6		52°	2794.0	645.2	
10°	1652.0	233.4		10°	2209.0	411.1		10°	2804.9	649.7	
20°	1661.0	235.9		20°	2218.6	414.5		20°	2815.2	654.3	
30°	1670.0	238.4		30°	2228.1	418.0		30°	2825.6	658.8	
40°	1679.1	241.0		40°	2237.7	421.4		40°	2835.9	663.4	
50°	1688.1	243.5		50°	2247.3	425.0		50°	2846.3	668.0	
33°	1697.2	246.1	10° C.	43°	2257.0	428.5	10° C.	53°	2856.7	672.7	10° C.
10°	1706.3	248.7	T	10°	2266.6	432.0	T	10°	2867.1	677.3	T
20°	1715.3	251.3	.26	20°	2276.2	435.6	.34	20°	2877.5	682.0	.42
30°	1724.4	253.9	E	30°	2285.9	439.2	E	30°	2887.8	686.7	E
40°	1733.5	256.5	.046	40°	2295.6	442.8	.075	40°	2898.4	691.4	.112
50°	1742.6	259.1		50°	2305.2	446.4		50°	2908.9	696.1	
34°	1751.7	261.8		44°	2314.9	450.0		54°	2919.4	700.9	
10°	1760.8	264.5		10°	2324.6	453.6		10°	2929.9	705.7	
20°	1770.0	267.2		20°	2334.3	457.3		20°	2940.4	710.5	
30°	1779.1	269.9		30°	2344.1	461.0		30°	2951.0	715.3	
40°	1788.2	272.6		40°	2353.8	464.6		40°	2961.5	720.1	
50°	1797.4	275.3		50°	2363.5	468.4		50°	2972.1	725.0	
35°	1806.6	278.1	15° C.	45°	2373.3	472.1	15° C.	55°	2982.7	729.9	15° C.
10°	1815.7	280.8	T	10°	2383.1	475.8	.51	10°	2993.3	734.8	.63
20°	1824.9	283.6	E	20°	2392.8	479.6	E	20°	3003.9	739.7	E
30°	1834.1	286.4	.070	30°	2402.6	483.4	.116	30°	3014.5	744.6	.168
40°	1843.3	289.2		40°	2412.4	487.2		40°	3025.2	749.6	
50°	1852.5	292.0		50°	2422.3	491.0		50°	3035.8	754.6	
36°	1861.7	294.9		46°	2432.1	494.8		56°	3046.5	759.6	
10°	1870.9	297.7		10°	2441.9	498.7		10°	3057.2	764.6	
20°	1880.1	300.6		20°	2451.8	502.5		20°	3067.9	769.7	
30°	1889.4	303.5		30°	2461.7	506.4		30°	3078.7	774.7	
40°	1898.6	306.4		40°	2471.5	510.3		40°	3089.4	779.8	
50°	1907.9	309.3		50°	2481.4	514.3		50°	3100.2	784.9	
37°	1917.1	312.2	20° C.	47°	2491.3	518.2	20° C.	57°	3110.9	790.1	20° C.
10°	1926.4	315.2	T	10°	2501.2	522.2	.68	10°	3121.7	795.2	.84
20°	1935.7	318.1	.093	20°	2511.2	526.1	.151	20°	3132.6	800.4	.225
30°	1945.0	321.1		30°	2521.1	530.1		30°	3143.4	805.6	
40°	1954.3	324.1		40°	2531.1	534.2		40°	3154.2	810.9	
50°	1963.6	327.1		50°	2541.0	538.2		50°	3165.1	816.1	
38°	1972.9	330.2		48°	2551.0	542.2		58°	3176.0	821.4	
10°	1982.2	333.2		10°	2561.0	546.3		10°	3186.9	826.7	
20°	1991.5	336.3		20°	2571.0	550.4		20°	3197.8	832.0	
30°	2000.9	339.3		30°	2581.0	554.5		30°	3208.8	837.3	
40°	2010.2	342.4		40°	2591.0	5					

TABLE X.
MIDDLE ORDINATES OF RAILS
Length of Rail (feet)

C o /	R Feet	30 Inch	28 Inch	26 Inch	24 Inch	22 Inch	20 Inch	C o	R Feet	30 Inch	28 Inch	26 Inch	24 Inch	22 Inch	20 Inch
0-20	17189	.08	.07	.06	.05	.04	.03	8	716.8	1.88	1.64	1.42	1.20	1.01	.84
0-40	8594	.16	.14	.12	.10	.08	.07	9	637.3	2.12	1.84	1.60	1.35	1.14	.94
1-0	5730	.24	.20	.18	.15	.13	.10	10	573.7	2.36	2.05	1.78	1.50	1.27	1.04
1-20	4297	.31	.27	.23	.20	.17	.13	11	521.7	2.59	2.26	1.95	1.65	1.39	1.15
1-40	3438	.39	.34	.29	.25	.21	.17	12	478.3	3.83	2.47	2.15	1.81	1.54	1.26
2-0	2865	.47	.41	.35	.30	.25	.20	13	441.7	3.05	2.66	2.30	1.96	1.66	1.36
2-20	2456	.55	.48	.41	.35	.29	.23	14	410.3	3.30	2.87	2.48	2.10	1.78	1.46
2-40	2149	.63	.55	.47	.40	.33	.27	15	383.1	3.54	3.08	2.68	2.26	1.91	1.57
3-0	1910	.71	.62	.53	.45	.38	.31	16	359.3	3.76	3.28	2.83	2.40	2.04	1.67
3-20	1719	.78	.68	.59	.50	.42	.35	17	338.3	4.00	3.48	3.02	2.57	2.16	1.78
3-40	1563	.86	.75	.65	.55	.46	.38	18	319.6	4.21	3.67	3.18	2.70	2.28	1.87
4-0	1433	.94	.82	.71	.60	.50	.42	19	302.9	4.45	3.89	3.36	2.86	2.41	1.98
4-20	1323	1.02	.89	.77	.65	.55	.45	20	287.9	4.70	4.09	3.55	3.00	2.54	2.09
4-40	1228	1.10	.96	.83	.70	.59	.48	22	262.0	5.16	4.44	3.84	3.30	2.80	2.29
5	1146	1.18	1.03	.89	.75	.63	.52	24	240.5	5.64	4.92	4.20	3.59	3.04	2.50
6	955.3	1.41	1.23	1.06	.90	.76	.62	26	222.3	6.07	5.29	4.58	3.88	3.29	2.70
7	819.0	1.65	1.44	1.24	1.05	.89	.73								

TABLE XI.
SHORT RADIUS CURVES

Radius Feet	Chord Feet	Central Angle	Deflection Angle	Deflection for 1 Foot
35	10	16-26	8-13	49.3
45	10	12-46	6-23	38.3
50	15	17-16	8-38	34.5
60	15	14-22	7-11	28.8
75	15	11-30	5-45	23.0
100	20	11-30	5-45	17.3
120	20	9-34	4-47	14.3
150	20	7-39	3-49	11.5
190	25	7-32	3-46	9.15
200	25	7-10	3-35	8.6
225	25	6-25	3-12	7.7
240	25	5-58	2-59	7.2
250	25	5-44	2-52	6.9
275	25	5-12	2-36	6.2
288	50	9-58	4-59	6.0
300	50	9-32	4-46	5.7
350	50	8-12	4-06	4.9
376	50	7-40	3-50	4.6
400	50	7-10	3-35	4.3
410	50	7-00	3-30	4.2

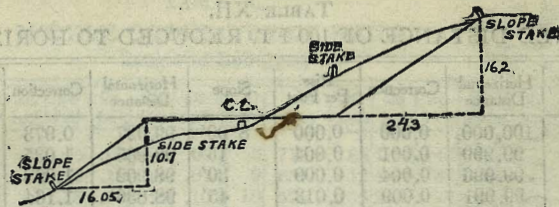
To find length of curve divide angle from P. C. to P. T. by central angle of chord, and multiply by length of chord.

TABLE XII.
INCLINED DISTANCE OF 100 FT. REDUCED TO HORIZONTAL

Slope	Horizontal Distance	Correction	Rise Per Foot	Slope	Horizontal Distance	Correction	Rise Per Foot
0°00'	100.000	0.000	0.000	8°00'	99.027	0.973	0.139
15'	99.999	0.001	0.004	15'	98.965	1.035	0.143
30'	99.996	0.004	0.009	30'	98.902	1.098	0.148
45'	99.991	0.009	0.013	45'	98.836	1.164	0.152
1 00	99.985	0.015	0.017	9 00	98.769	1.231	0.156
15	99.976	0.024	0.022	15	98.700	1.300	0.161
30	99.966	0.034	0.026	30	98.629	1.371	0.165
45	99.953	0.047	0.031	45	98.556	1.444	0.169
2 00	99.939	0.061	0.035	10 00	98.481	1.519	0.174
15	99.923	0.077	0.039	15	98.404	1.596	0.178
30	99.905	0.095	0.044	30	98.325	1.675	0.182
45	99.885	0.115	0.048	45	98.245	1.755	0.187
3 00	99.863	0.137	0.052	11 00	98.163	1.837	0.191
15	99.839	0.161	0.057	15	98.079	1.921	0.195
30	99.813	0.187	0.061	30	97.992	2.008	0.199
45	99.786	0.214	0.065	45	97.905	2.095	0.204
4 00	99.756	0.244	0.070	12 00	97.815	2.185	0.208
15	99.725	0.275	0.074	15	97.723	2.277	0.212
30	99.692	0.308	0.078	30	97.630	2.370	0.216
45	99.657	0.343	0.083	45	97.534	2.466	0.221
5 00	99.619	0.381	0.087	13 00	97.437	2.563	0.225
15	99.580	0.420	0.092	15	97.338	2.662	0.229
30	99.540	0.460	0.096	30	97.237	2.763	0.233
45	99.497	0.503	0.100	45	97.134	2.866	0.238
6 00	99.452	0.548	0.105	14 00	97.030	2.970	0.242
15	99.406	0.594	0.109	15	96.923	3.077	0.246
30	99.357	0.643	0.113	30	96.815	3.185	0.250
45	99.307	0.693	0.118	45	96.705	3.295	0.255
7 00	99.255	0.745	0.122	15 00	96.593	3.407	0.259
15	99.200	0.800	0.126	15	96.479	3.521	0.263
30	99.144	0.856	0.131	30	96.363	3.637	0.267
45	99.087	0.913	0.135	45	96.246	3.754	0.271

TABLE XIII.
MINUTES IN DECIMALS OF A DEGREE.

0 30"	.00833	10 30"	.17500	20 30"	.34167	30 10"	.50833	40 30"	.67500	50 10"	.84167
1 00	.01667	11 00	.18333	21 00	.35000	31 00	.51667	41 00	.68333	51 00	.85000
30	.02500	30	.19167	30	.35833	30	.52500	30	.69167	30	.85833
2 00	.03333	12 00	.20000	22 00	.36667	32 00	.53333	42 00	.70000	52 00	.86667
30	.04167	30	.20833	30	.37500	30	.54167	30	.70833	30	.87500
3 00	.05000	13 00	.21667	23 00	.38333	33 00	.55000	43 00	.71667	53 00	.88333
30	.05833	30	.22500	30	.39167	30	.55833	30	.72500	30	.89167
4 00	.06667	14 00	.23333	24 00	.40000	34 00	.56667	44 00	.73333	54 00	.90000
30	.07500	30	.24167	30	.40833	30	.57500	30	.74167	30	.90833
5 00	.08333	15 00	.25000	25 00	.41667	35 00	.58333	45 00	.75000	55 00	.91667
30	.09167	30	.25833	30	.42500	30	.59167	30	.75833	30	.92500
6 00	.10000	16 00	.26667	26 00	.43333	36 00	.60000	46 00	.76667	56 00	.93333
30	.10833	30	.27500	30	.44167	30	.60833	30	.77500	30	.94167
7 00	.11667	17 00	.28333	27 00	.45000	37 00	.61667	47 00	.78333	57 00	.95000
30	.12500	30	.29167	30	.45833	30	.62500	30	.79167	30	.95833
8 00	.13333	18 00	.30000	28 00	.46667	38 00	.63333	48 00	.80000	58 00	.96667
30	.14167	30	.30833	30	.47500	30	.64167	30	.80833	30	.97500
9 00	.15000	19 00	.31667	29 00	.48333	39 00	.65000	49 00	.81667	59 00	.98333
30	.15833	30	.32500	30	.49167	30	.65833	30	.82500	30	.99167
10 00	.16667	20 00	.33333	30 00	.50000	40 00	.66667	50 00	.83333	60 00	1.00000



DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING

SLOPE 1 1/2 TO 1. ROADWAY OF ANY WIDTH.

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	0 00	0 15	0 30	0 45	0 60	0 75	0 90	1 05	1 20	1 35	0
1	1 50	1 65	1 80	1 95	2 10	2 25	2 40	2 55	2 70	2 85	1
2	3 00	3 15	3 30	3 45	3 60	3 75	3 90	4 05	4 20	4 35	2
3	4 50	4 65	4 80	4 95	5 10	5 25	5 40	5 55	5 70	5 85	3
4	6 00	6 15	6 30	6 45	6 60	6 75	6 90	7 05	7 20	7 35	4
5	7 50	7 65	7 80	7 95	8 10	8 25	8 40	8 55	8 70	8 85	5
6	9 00	9 15	9 30	9 45	9 60	9 75	9 90	10 05	10 20	10 35	6
7	10 50	10 65	10 80	10 95	11 10	11 25	11 40	11 55	11 70	11 85	7
8	12 00	12 15	12 30	12 45	12 60	12 75	12 90	13 05	13 20	13 35	8
9	13 50	13 65	13 80	13 95	14 10	14 25	14 40	14 55	14 70	14 85	9
10	15 00	15 15	15 30	15 45	15 60	15 75	15 90	16 05	16 20	16 35	10
11	16 50	16 65	16 80	16 95	17 10	17 25	17 40	17 55	17 70	17 85	11
12	18 00	18 15	18 30	18 45	18 60	18 75	18 90	19 05	19 20	19 35	12
13	19 50	19 65	19 80	19 95	20 10	20 25	20 40	20 55	20 70	20 85	13
14	21 00	21 15	21 30	21 45	21 60	21 75	21 90	22 05	22 20	22 35	14
15	22 50	22 65	22 80	22 95	23 10	23 25	23 40	23 55	23 70	23 85	15
16	24 00	24 15	24 30	24 45	24 60	24 75	24 90	25 05	25 20	25 35	16
17	25 50	25 65	25 80	25 95	26 10	26 25	26 40	26 55	26 70	26 85	17
18	27 00	27 15	27 30	27 45	27 60	27 75	27 90	28 05	28 20	28 35	18
19	28 50	28 65	28 80	28 95	29 10	29 25	29 40	29 55	29 70	29 85	19
20	30 00	30 15	30 30	30 45	30 60	30 75	30 90	31 05	31 20	31 35	20
21	31 50	31 65	31 80	31 95	32 10	32 25	32 40	32 55	32 70	32 85	21
22	33 00	33 15	33 30	33 45	33 60	33 75	33 90	34 05	34 20	34 35	22
23	34 50	34 65	34 80	34 95	35 10	35 25	35 40	35 55	35 70	35 85	23
24	36 00	36 15	36 30	36 45	36 60	36 75	36 90	37 05	37 20	37 35	24
25	37 50	37 65	37 80	37 95	38 10	38 25	38 40	38 55	38 70	38 85	25
26	39 00	39 15	39 30	39 45	39 60	39 75	39 90	40 05	40 20	40 35	26
27	40 50	40 65	40 80	40 95	41 10	41 25	41 40	41 55	41 70	41 85	27
28	42 00	42 15	42 30	42 45	42 60	42 75	42 90	43 05	43 20	43 35	28
29	43 50	43 65	43 80	43 95	44 10	44 25	44 40	44 55	44 70	44 85	29
30	45 00	45 15	45 30	45 45	45 60	45 75	45 90	46 05	46 20	46 35	30
31	46 50	46 65	46 80	46 95	47 10	47 25	47 40	47 55	47 70	47 85	31
32	48 00	48 15	48 30	48 45	48 60	48 75	48 90	49 05	49 20	49 35	32
33	49 50	49 65	49 80	49 95	50 10	50 25	50 40	50 55	50 70	50 85	33
34	51 00	51 15	51 30	51 45	51 60	51 75	51 90	52 05	52 20	52 35	34
35	52 50	52 65	52 80	52 95	53 10	53 25	53 40	53 55	53 70	53 85	35
36	54 00	54 15	54 30	54 45	54 60	54 75	54 90	55 05	55 20	55 35	36
37	55 50	55 65	55 80	55 95	56 10	56 25	56 40	56 55	56 70	56 85	37
38	57 00	57 15	57 30	57 45	57 60	57 75	57 90	58 05	58 20	58 35	38
39	58 50	58 65	58 80	58 95	59 10	59 25	59 40	59 55	59 70	59 85	39
40	60 00	60 15	60 30	60 45	60 60	60 75	60 90	61 05	61 20	61 35	40
41	61 50	61 65	61 80	61 95	62 10	62 25	62 40	62 55	62 70	62 85	41
42	63 00	63 15	63 30	63 45	63 60	63 75	63 90	64 05	64 20	64 35	42
43	64 50	64 65	64 80	64 95	65 10	65 25	65 40	65 55	65 70	65 85	43
44	66 00	66 15	66 30	66 45	66 60	66 75	66 90	67 05	67 20	67 35	44
45	67 50	67 65	67 80	67 95	68 10	68 25	68 40	68 55	68 70	68 85	45
46	69 00	69 15	69 30	69 45	69 60	69 75	69 90	70 05	70 20	70 35	46
47	70 50	70 65	70 80	70 95	71 10	71 25	71 40	71 55	71 70	71 85	47
48	72 00	72 15	72 30	72 45	72 60	72 75	72 90	73 05	73 20	73 35	48
49	73 50	73 65	73 80	73 95	74 10	74 25	74 40	74 55	74 70	74 85	49
50	75 00	75 15	75 30	75 45	75 60	75 75	75 90	76 05	76 20	76 35	50

Computed by L. Leland Locke.

118.76 BM.

3.83
122.59
10.11
112.48
1.50
60.98

15

110.00 Key M 11
Flow Lm

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17292
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28376 | 72

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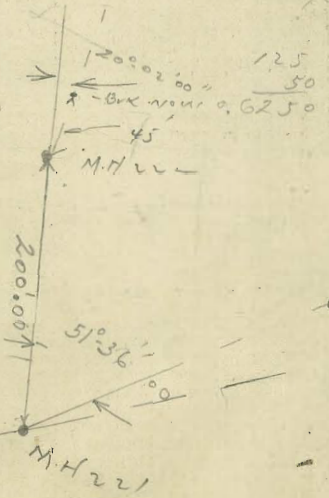
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150
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57
112.98
0.50%

Necessary Key
Voltage 18.4v-00



$$\begin{array}{r} 4750 \\ 23750 \\ \hline 28500 \end{array}$$

$$\begin{array}{r} 4750 \\ 23750 \\ \hline 32880.43 \\ 10534 \\ \hline 185.77 \\ 10.93 \\ \hline 17504 \end{array}$$

$$\begin{array}{r} 4114 \\ 36999 \\ \hline 4114 \end{array}$$

$$\begin{array}{r} 1750 \\ 6 \\ \hline 10500 \end{array}$$

$$\begin{array}{r} 616 \\ 3.77 \\ \hline 239 \end{array}$$

$$\begin{array}{r} -184 \\ 468 \\ \hline +284 \end{array}$$

$$\begin{array}{r} 20.5 \\ 20.5 \end{array}$$

$$\begin{array}{r} 284 \\ 471 \\ \hline 187 \\ 1.88 \\ 470 \\ \hline 1.88 \end{array}$$

BM.
$$\begin{array}{r} +284 \\ 501 \\ \hline +217 \end{array}$$

$$\begin{array}{r} 2.84 \\ 601 \\ \hline 323 \end{array}$$

$$\begin{array}{r} 337 \\ 501 \\ \hline 164 \end{array}$$

$$\begin{array}{r} 23.63 \\ 519 \\ \hline 18.44 \end{array}$$

$$\begin{array}{r} 1640 \\ 610 \\ \hline 10.39 \end{array}$$

$$\begin{array}{r} 1793 \\ 519 \\ \hline 12.74 \end{array}$$

$$\begin{array}{r} 557.60 \\ 252.80 \\ \hline 810.40 \end{array}$$

$$\begin{array}{r} 4750 \\ 3 \\ \hline 14250 \end{array}$$

$$\begin{array}{r} 56.10 \\ 329 \\ \hline 52.71 \end{array}$$

$$\begin{array}{r} 140.49 \\ 416 \\ \hline 136.33 \end{array}$$

$$\begin{array}{r} 13.80 \\ 575 \\ \hline 8.05 \end{array}$$

$$\begin{array}{r} 190 \\ 116 \\ \hline 78.4 \end{array}$$

$$\begin{array}{r} 4750 \\ 4 \\ \hline 19000 \end{array}$$

N. side of 77

$$\begin{array}{r} 1640 \\ 10.39 \\ \hline 610 \end{array}$$

$$\begin{array}{r} 507 \\ 355.50 \\ \hline 35 \end{array}$$

$$\begin{array}{r} 521 \\ 478 \\ \hline 60 \end{array}$$

$$\begin{array}{r} 1840 \\ 883 \\ \hline 906 \end{array}$$

$$\begin{array}{r} 2050 \\ 49.97 \\ \hline 66 \end{array}$$

$$\begin{array}{r} 843.50 \\ 11.76 \\ \hline 286 \end{array}$$

$$\begin{array}{r} 108.90 \\ 108.88 \\ \hline 0.02 \end{array}$$

$$\begin{array}{r} 1686 \\ 958 \\ \hline 7.28 \end{array}$$

$$\begin{array}{r} 5116 \\ 57 \\ \hline 5059 \end{array}$$

$$\begin{array}{r} 80.89 \\ 274 \\ \hline 78.15 \end{array}$$

$$\begin{array}{r} 37.5 \\ 43.20 \\ \hline 23 \end{array}$$

$$\begin{array}{r} 5373 \\ 5296 \\ \hline 142507 \end{array}$$

$$\begin{array}{r} 6.50 \\ 500 \end{array}$$

$$\begin{array}{r} 56.10 \\ 319 \\ \hline 52.96 \end{array}$$

$$\begin{array}{r} 2.49 \\ 391 \\ \hline 6.40 \end{array}$$

$$\begin{array}{r} 104 \\ 92 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 240 \\ 72 \\ \hline 168 \end{array}$$

$$\begin{array}{r} 45 \\ 800 \\ \hline 845 \end{array}$$

$$\begin{array}{r} 7560 \\ 43 \end{array}$$

$$\begin{array}{r} 4788 \\ 4786 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 1111.76 \\ 258 \\ \hline 108.88 \end{array}$$

$$\begin{array}{r} 4857 \\ 7 \end{array}$$

$$\begin{array}{r} 128.50 \\ 337.99 \\ \hline 11.50 \end{array}$$

$$\begin{array}{r} 370 \\ 340 \\ \hline 33.0 \end{array}$$

$$\begin{array}{r} 140 \\ 43 \\ \hline 183 \end{array}$$

$$\begin{array}{r} 20.5 \\ 20 \\ \hline 40.5 \end{array}$$

$$\begin{array}{r} 595 \\ 6 \\ \hline 601 \end{array}$$

$$\begin{array}{r} 42.05 \\ 7 \end{array}$$

$$\begin{array}{r} 50.8 \\ 26.5 \end{array}$$

$$\begin{array}{r} 337 \\ 49 \\ \hline 185 \end{array}$$

$$\begin{array}{r} 607 \\ 377 \\ \hline 230 \end{array}$$

$$\begin{array}{r} 270 \end{array}$$

$$\begin{array}{r} 43 \\ 57 \\ \hline 205 \end{array}$$

$$\begin{array}{r} 205 \\ 23 \\ \hline 182 \end{array}$$

$$\begin{array}{r} 37.5 \\ 60 \\ \hline 31.5 \end{array}$$

$$\begin{array}{r} 23 \\ 93 \\ \hline 70 \end{array}$$