

OWNER: Cerebral Palsy Research Foundation.
2021 N. Old Manor

Engineer: Professional Engineering Consultants.
1440 English.



 100-Year Flood Routing
 Drainage Flow Direction
 Proposed Inlet & No.
 Existing Inlet
 Drainage Boundary

**PROFESSIONAL
ENGINEERING
CONSULTANTS**

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TO: City of Wichita	PROJECT NO. 36-65160-757
	PROJECT: Timbrook
	3rd Addition
ATTN: Mr. Chris Breitenstein, P.E.	DATE: 7/9/85
FROM: Charles S. Broum, P.E.	
REFERENCE: Revised Drainage Plan	

IMMEDIATELY OF ANY MISCONCEPTIONS OR OMISSIONS YOU BELIEVE TO BE CONTAINED HEREIN

Transmitted herewith are two (2) copies of the Revised Drainage Plan and supporting calculations for the referenced project.

The Final Plat will be submitted on July 19, 1985, for hearing by the Subdivision Committee on August 1, 1985.

If you have any questions, or need any additional information, please advise.

CSB/mk

RECEIVED
JUL 11 1935
DESIGN DIVISION

No.	Inlet Type	Design	Q
104	Curb Inlet	G ₁₀₀	11.5 cfs
103	Catch Basin	G ₂	5.1 cfs
102	" "	G ₂	2.4 cfs
101	" "	G ₂	2.0 cfs
100	(Existing Manhole to remain)		

104

$Q = 11.5 \text{ cfs}$

Assume 1 row Type 1A Inlet $L = 5'$
 $a = 16'$

$A = LH = 5 \times 0.5 = 2.5'$

using chart & allocation $d_f = 0.95'$

Max. $d_f = \text{Max } d + a$

$= (\text{Curb depth} + 0.3') + (.8')$

$= (0.55' + 0.3') + (0.15') = 1.0'$

$L/S = 1 \text{ CURB INLET } L = 5'$

Use depth of water = 0.4'
Using Chart H and Chart P requires = 7
Use 1 Cow Stn. 2x4' Catch Basin
P Provided = 121

 PROFESSIONAL ENGINEERING & CONSULTANTS INCORPORATED IN CANADA 1505-1505 STREET WILLOWDALE, ONTARIO M2H 3L1 (416) 491-9600		HYDROLOGY DATA SHEET PROJECT: <u>Timbrook 2nd Addition</u>		PAGE <u>1</u> OF <u>7</u> NO. <u>30-B5160-757</u>	
		ITEM: <u>Storm Drainage</u>		DATE: <u>7-9-85</u>	
RETURN PERIOD: <u>2</u> *		COMPUTATIONS BY: <u>CSE</u>		REVISIONS BY: _____	

SCHEMATIC DIAGRAM:

* 2 yr in all basins except 104
100 yr in subbasin 104

TRIBUTARY AREA				HYDROLOGY SUMMATION				CONDUIT DATA						
BUS BASIN	C	AREA (acres)	LENGTH (ft)	S ₁ (ft/mile)	Q ₁ (cfs)	S ₂ (ft/mile)	Q ₂ (cfs)	PIPE (inches)	SLOPE (%)	VELOCITY (ft/sec)	LENGTH (feet)	T ₁ (minutes)	T ₂ (minutes)	
104	0.5	3.3	100	0.29	6.95	11.5	29	6.95	11.5	18"	1.2	6.5	27.9	2.7
103	0.5	4.5	41	0.41	2.27	5.1	41	2.27	5.1	15"	0.55	4.0	120	0.5
102	0.3	1.2	15	4.06	2.4	41.5	2.37 (100) 2.33 (100)	15.1	21"	0.85	6.1	37.0	0.9	
101	0.5	1.0	15	4.06	2.0	42.4	2.37 (100) 2.33 (100)	16.0	21"	1.0	6.6	30"	0.2	
100	-	(Mainline)												
km From Timbrook End Addition Approved Drains Plan														

[illegible]

Date 7-9-85 Page 4 of 7

Project Timbrook 3rd Addition

Item Inlet Sizing

102 $Q = 2.4 \text{ cfs}$ use depth of water = $0.4'$
Using chart it attached, Required = $3'$
Use 1 CON STD $2' \times 4'$ catch Basin
P provided = $10'$

101 $Q = 2.0 \text{ cfs}$ use depth of water = $0.4'$
Using Chart attached, Required = $3'$
Use 1 CON STD $2' \times 4'$ Catch Basin
P provided = $10'$

Date 7-9-88 Page 5 of 7

Project Timberline 3rd Addition

Item Gravel Ditch Desigm.

Design ditches in back of lots to handle difference between 100 yr. Q & Q in pipe.

$$Q_{ditch} = Q_{no} - Q_{pipe}$$

Ditch Location	Q ₁₀₀	Q ₅₀	Q ₁₀
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[illegible]

103	→	102.	12.0 cfs	5.1 cfs	6.9 cfs
104	→	107.	11.5	11.5	0.0

104. $\rightarrow$ 102	11.3	11.3	8.6
103. $\rightarrow$ 101	22.5	15.1	8.7

101	→	102	25.6	16.0	9.8
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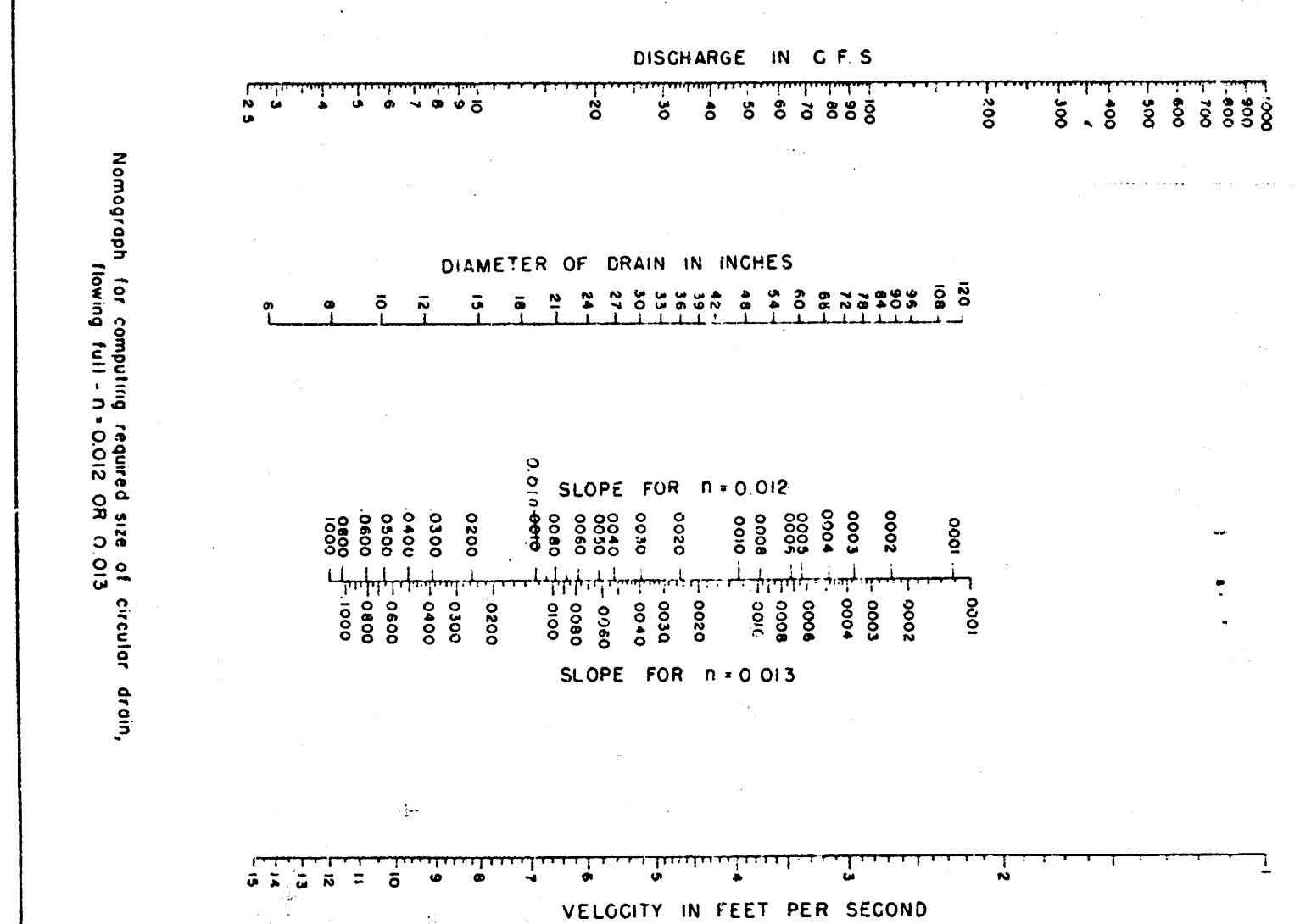
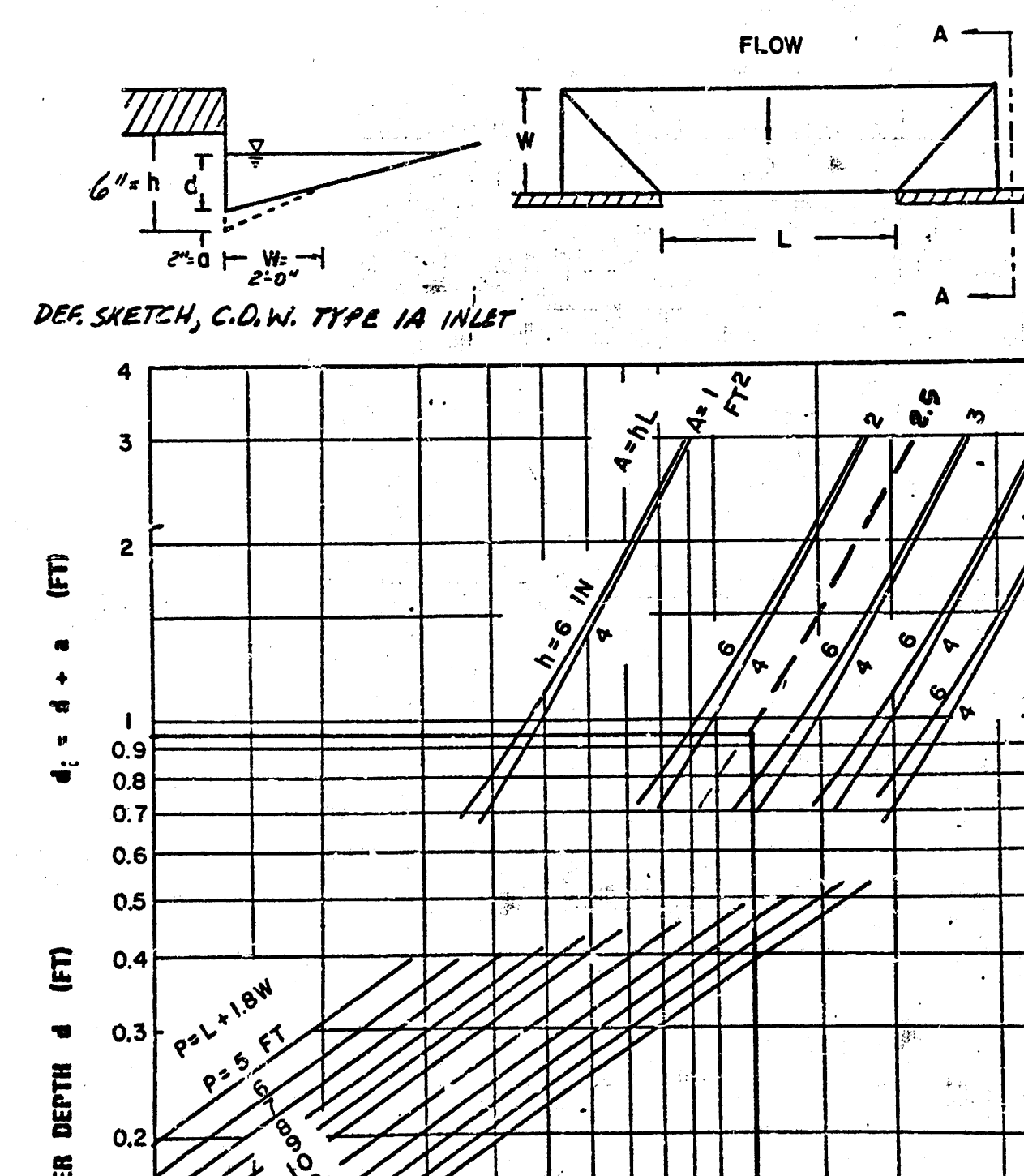
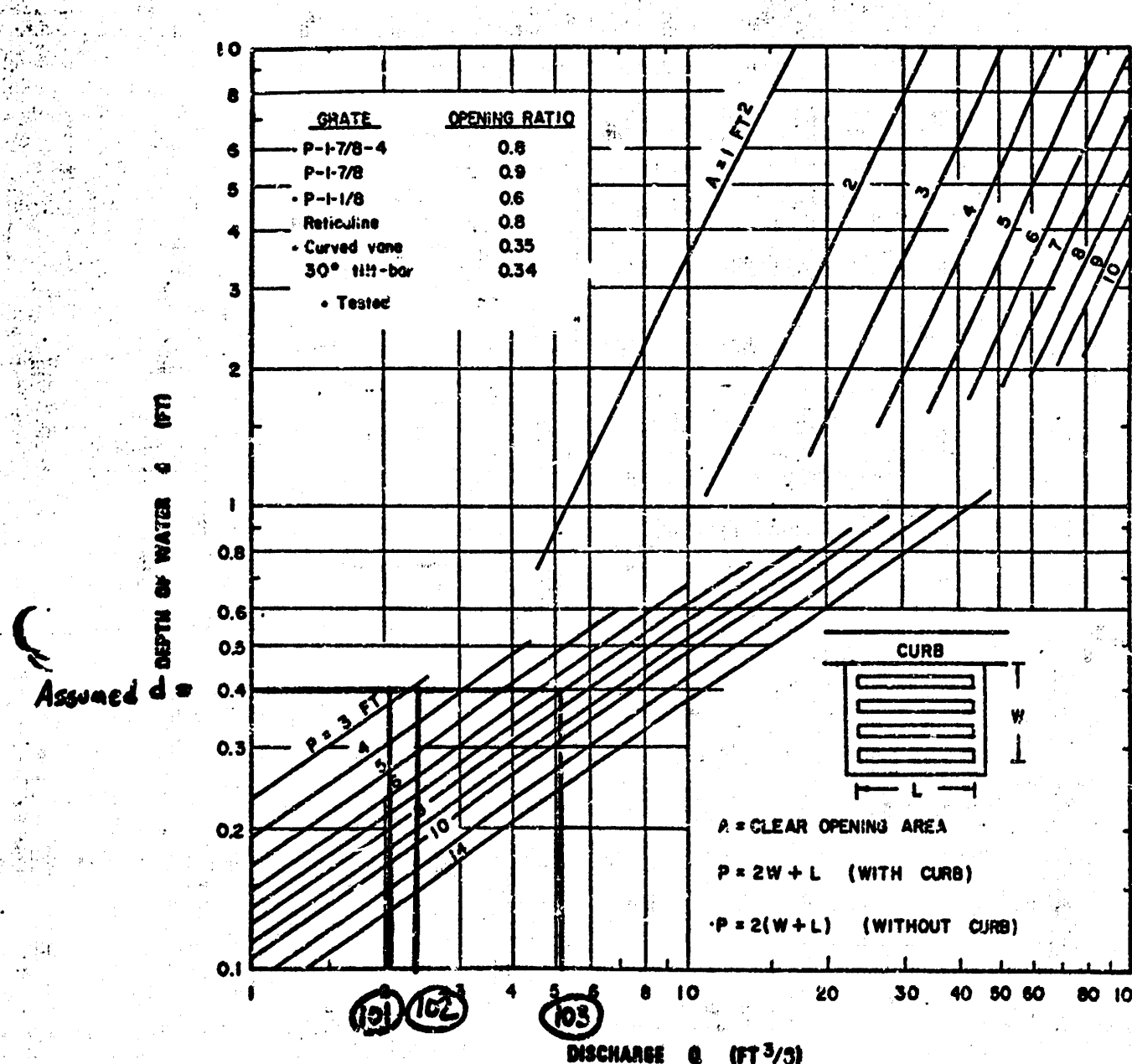
30' Easement

22.8' 7.2'

• Miss Ditch G.

TIPICAL DITCH

Use Mannings Eq'n for ~~open~~ chan



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RAINFALL INTENSITY TABLE
for
SEDGWICK COUNTY KANSAS

The following tabulation contains rainfall intensity in inches per hour as derived from ESSA Weather Bureau Technical Paper 40.

DURATION IN MINUTES	1-YR	2-YR	5-YR	10-YR	25-YR	50-YR	100-YR
5	4.67	6.23	8.00	9.34	10.67	12.23	13.79
6	4.35	5.80	7.45	8.70	9.94	11.39	12.84
7	4.09	5.46	7.02	8.19	9.36	10.72	12.09
8	3.88	5.18	6.66	7.77	8.89	10.18	11.48
9	3.71	4.95	6.36	7.43	8.49	9.72	10.96
10	3.56	4.75	6.11	7.13	8.15	9.33	10.52
11	3.43	4.58	5.89	6.87	7.85	8.99	10.14
12	3.32	4.43	5.69	6.64	7.59	8.69	9.80
13	3.21	4.29	5.51	6.43	7.35	8.42	9.50
14	3.12	4.17	5.36	6.25	7.14	8.18	9.23
15	3.04	4.06	5.23	6.08	6.95	7.97	8.98
16	2.96	3.96	5.09	5.93	6.78	7.77	8.76
17	2.90	3.86	4.97	5.79	6.62	7.59	8.55
18	2.83	3.78	4.86	5.67	6.48	7.42	8.37
19	2.77	3.70	4.76	5.55	6.34	7.27	8.19
20	2.72	3.63	4.66	5.44	6.22	7.12	8.03
21	2.67	3.56	4.57	5.34	6.10	6.99	7.88
22	2.62	3.49	4.49	5.24	5.99	6.86	7.74
23	2.57	3.43	4.41	5.15	5.89	6.74	7.60
24	2.53	3.38	4.34	5.07	5.79	6.63	7.48
25	2.49	3.32	4.27	4.99	5.70	6.53	7.36
26	2.45	3.23	4.21	4.91	5.61	6.43	7.25
27	2.42	3.13	4.15	4.84	5.53	6.33	7.14
28	2.38	3.05	4.09	4.77	5.45	6.25	7.04
29	2.35	2.97	4.02	4.68	5.38	6.16	6.95
30	2.32	2.89	3.92	4.56	5.31	6.08	6.79
31	2.29	2.82	3.82	4.44	5.19	6.00	6.62
32	2.26	2.75	3.73	4.33	5.07	5.87	6.45
33	2.24	2.68	3.64	4.23	4.95	5.73	6.30
34	2.19	2.62	3.55	4.13	4.83	5.60	6.16
35	2.14	2.57	3.47	4.04	4.73	5.47	6.02
36	2.09	2.51	3.40	3.95	4.62	5.35	5.89
37	2.05	2.46	3.33	3.87	4.52	5.23	5.76
38	2.00	2.41	3.26	3.79	4.43	5.13	5.64
39	1.96	2.36	3.19	3.71	4.34	5.02	5.53
40	1.92	2.32	3.13	3.64	4.25	4.92	5.42
41	1.89	2.27	3.07	3.57	4.18	4.83	5.32
42	1.85	2.23	3.01	3.51	4.10	4.74	5.22
43	1.82	2.19	2.96	3.44	4.02	4.65	5.13
44	1.78	2.15	2.91	3.38	3.95	4.56	5.03
45	1.75	2.11	2.86	3.32	3.88	4.48	4.95

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DURATION IN MINUTES	1-YR	2-YR	5-YR	10-YR	25-YR	50-YR	100-YR
46	1.72	2.08	2.81	3.27	3.82	4.41	4.86
47	1.69	2.04	2.76	3.21	3.76	4.33	4.78
48	1.67	2.01	2.72	3.16	3.69	4.26	4.70
49	1.64	1.98	2.67	3.11	3.63	4.19	4.63
50	1.61	1.95	2.63	3.06	3.58	4.13	4.56
51	1.59	1.92	2.59	3.01	3.52	4.06	4.49
52	1.56	1.89	2.55	2.97	3.47	4.00	4.42
53	1.54	1.86	2.51	2.92	3.42	3.94	4.35
54	1.52	1.84	2.48	2.88	3.37	3.88	4.29
55	1.50	1.81	2.44	2.84	3.32	3.83	4.23
56	1.47	1.79	2.41	2.80	3.27	3.77	4.17
57	1.45	1.76	2.37	2.76	3.23	3.72	4.11
58	1.43	1.74	2.34	2.73	3.19	3.67	4.06
59	1.42	1.72	2.31	2.69	3.14	3.62	4.01
60	1.40	1.69	2.28	2.65	3.10	3.57	3.95
61	1.38	1.67	2.25	2.62	3.06	3.53	3.90
62	1.36	1.65	2.22	2.59	3.02	3.48	3.85
63	1.34	1.63	2.20	2.55	2.99	3.44	3.81
64	1.33	1.61	2.17	2.52	2.95	3.40	3.76
65	1.31	1.59	2.14	2.49	2.92	3.35	3.71
66	1.30	1.57	2.12	2.46	2.88	3.31	3.67
67	1.28	1.56	2.09	2.44	2.85	3.27	3.63
68	1.26	1.54	2.07	2.41	2.81	3.24	3.59
69	1.25	1.52	2.05	2.38	2.78	3.20	3.54
70	1.24	1.50	2.02	2.35	2.75	3.16	3.51
71	1.22	1.49	2.00	2.33	2.72	3.13	3.47
72	1.21	1.47	1.98	2.30	2.69	3.09	3.43
73	1.20	1.46	1.96	2.28	2.66	3.06	3.39
74	1.18	1.44	1.94	2.25	2.63	3.03	3.36
75	1.17	1.43	1.92	2.23	2.61	3.00	3.32
76	1.16	1.41	1.90	2.21	2.58	2.96	3.29
77	1.15	1.40	1.88	2.18	2.55	2.93	3.25
78	1.13	1.38	1.86	2.16	2.53	2.90	3.22
79	1.12	1.37	1.84	2.14	2.50	2.88	3.19
80	1.11	1.36	1.82	2.12	2.48	2.85	3.16
81	1.10	1.34	1.81	2.10	2.46	2.82	3.13
82	1.09	1.33	1.79	2.08	2.43	2.79	3.10
83	1.08	1.32	1.77	2.06	2.41	2.76	3.07
84	1.07	1.31	1.75	2.04	2.39	2.74	3.04
85	1.06	1.30	1.74	2.03	2.37	2.71	3.01
86	1.05	1.28	1.72	2.00	2.34	2.69	2.99
87	1.04	1.27	1.71	1.99	2.32	2.66	2.96
88	1.03	1.26	1.69	1.97	2.30	2.64	2.93
89	1.02	1.25	1.68	1.95	2.28	2.62	2.91
90	1.01	1.24	1.66	1.93	2.26	2.59	2.88

TIMBROOK 3RD ADDITION
(Drainage)

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DURATION IN MINUTES	1-YR	2-YR	5-YR	10-YR	25-YR	50-YR	100-YR
91	1.00	1.23	1.65	1.92	2.24	2.57	2.86
92	1.00	1.22	1.63	1.90	2.22	2.55	2.83
93	0.99	1.21	1.62	1.89	2.20	2.53	2.81
94	0.98	1.20	1.61	1.87	2.19	2.51	2.79
95	0.97	1.19	1.59	1.85	2.17	2.49	2.76
96	0.96	1.18	1.58	1.84	2.15	2.46	2.74
97	0.96	1.17	1.57	1.82	2.13	2.44	2.72
98	0.95	1.16	1.56	1.81	2.12	2.42	2.70
99	0.94	1.15	1.54	1.80	2.10	2.41	2.67
100	0.93	1.14	1.53	1.78	2.08	2.39	2.65
101	0.93	1.13	1.52	1.77	2.07	2.39	2.65
102	0.92	1.13	1.51	1.75	2.05	2.35	2.61
103	0.91	1.12	1.50	1.74	2.04	2.33	2.59
104	0.90	1.11	1.49	1.73	2.02	2.31	2.57
105	0.90	1.10	1.47	1.72	2.01	2.30	2.55
106	0.89	1.09	1.46	1.70	1.99	2.28	2.54
107	0.88	1.09	1.45	1.69	1.98	2.26	2.52
108	0.86	1.08	1.44	1.68	1.96	2.25	2.50
109	0.87	1.07	1.43	1.67	1.95	2.23	2.48
110	0.87	1.06	1.42	1.65	1.93	2.21	2.46
111	0.86	1.06	1.41	1.64	1.92	2.20	2.45
112	0.85	1.05	1.40	1.63	1.91	2.18	2.43
113	0.85	1.04	1.39	1.62	1.89	2.17	2.41
114	0.84	1.03	1.38	1.61	1.88	2.15	2.40
115	0.84	1.03	1.37	1.60	1.87	2.14	2.38
116	0.83	1.02	1.36	1.59	1.86	2.12	2.36
117	0.82	1.01	1.36	1.58	1.84	2.11	2.35
118	0.82	1.01	1.35	1.57	1.83	2.09	2.33
119	0.81	1.00	1.34	1.56	1.82	2.08	2.32
120	0.81	0.99	1.33	1.55	1.81	2.07	2.30
121	0.80	0.99	1.32	1.54	1.80	2.05	2.29
122	0.80	0.98	1.31	1.53	1.78	2.04	2.27
123	0.79	0.97	1.30	1.52	1.77	2.03	2.26
124	0.79	0.97	1.30	1.51	1.76	2.01	2.24
125	0.78	0.96	1.29	1.50	1.75	2.00	2.23
126	0.78	0.96	1.28	1.49	1.74	1.99	2.22
127	0.77	0.95	1.27	1.48	1.73	1.98	2.20
128							
129							
130							
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