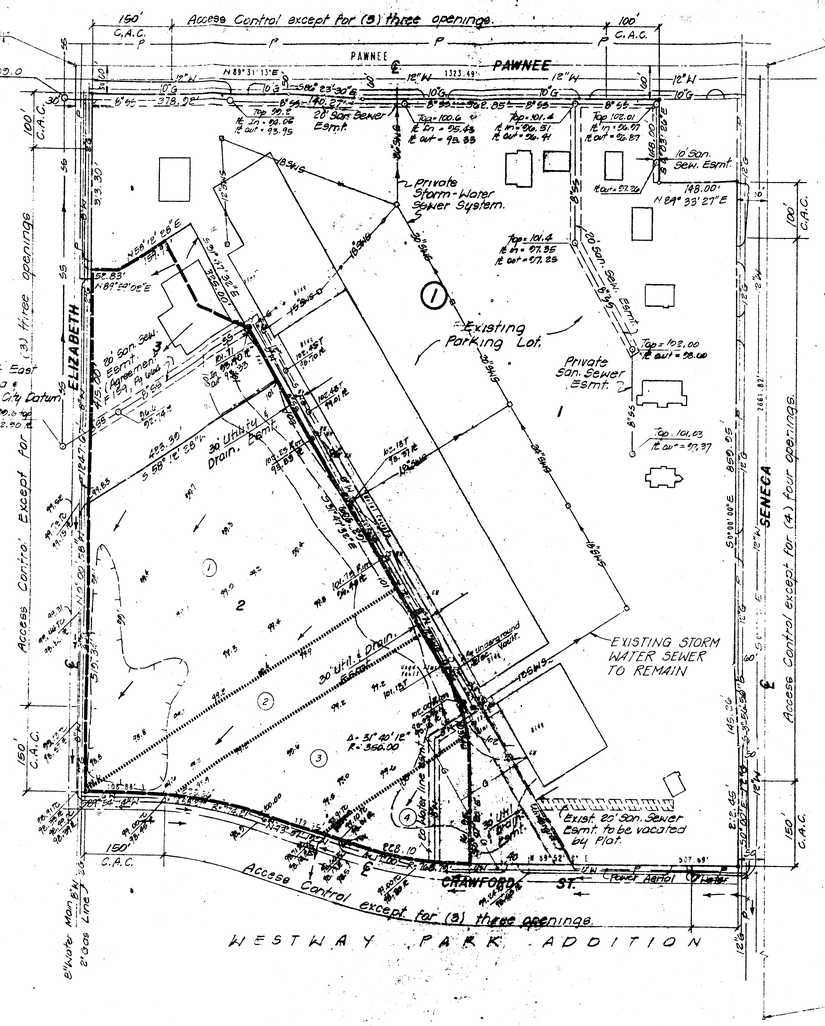


Notes:-
Underground Elec. (S.Western Bell Co.) along west side of Seneca, north side of Pawnee, east side of Elizabeth & north side of Crawford.
For buildings setbacks see D.U.P. D.P.-21 amended. Date of "OD" March 21, 1975

Florida On-site Detention

DRAINAGE PLAN 5-16-86

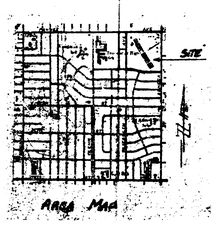
WESTWAY

Wichita, Sedgwick County, Kansas.

Owner/Developer: Phil Ruffin P.O. Box 17087 Wichita, Ks.

Engineer: R.E.C. p.a.
1440 English, Wichita, Ks. 67211

Notes:
1. Lots 1 & 3 shall continue to be drained via existing streets & private storm water sewer system.
2. Lot 2 shall be graded to drain to existing streets, gutters, and/or storm water sewer systems via drives, flumes, private storm sewers and/or other approved drainage facilities.



LEGEND

- DRAINAGE BASIN BOUNDARY
- DRAINAGE SUB-BASIN BOUNDARY
- DRAINAGE FLOW DIRECTION
- (2) SUB-BASIN NUMBER

1/4" I.P. in Thimble NE Cor. SE1/4 Sec. 6 T28S. R1E of the 6th P.M.

CHARLES S. BROWN KANSAS PROFESSIONAL ENGINEER

1" = 100'

WESTWAY ADDITION
(Drainage)

MEMO

TO: City of Wichita
Engineering Dept.
ATTN: Mr. Carl Gipson, P.E.

PROJECT NO. 36-66510-1014
PROJECT: Westway Add'n.
DATE: May 27, 1986
FROM: Charles S. Brown, P.E.
REFERENCE: Revised Drainage Plan

COPIES TO:
Forrest Nagley, MAPD
File

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

Transmitted herewith are two (2) prints of the revised Drainage Plan for Westway Addition to Wichita.

The drainage plan has been revised to note that the combined maximum allowable discharge from Sub-Basins 1 through 4 is limited to 25 cfs.

The preliminary plat was approved by the Subdivision Committee on May 22, 1986, subject to this drainage revision.

If you have any questions, please advise.

CSB/mkm

RECEIVED
MAY 28 1986
DESIGN DIVISION

Date 5-16-86 Page 1 of 4
Project Westway
Item Drainage

SUBAREA No. 1

A. Existing Conditions

Q = cIA
c = 0.3
t_c = 45 min.
I_2 = 2.08 I_{100} = 4.38
A = 7.6 Ac.

Q_2 = 0.3 × 2.08 × 7.6
Q_2 = 4.7 cfs
Depth of St. Flow = 0.35'

Q_{100} = 0.3 × 4.38 × 7.6
Q_{100} = 10.0 cfs
Depth of St. Flow = 0.47

B. Proposed Conditions

Q = cIA
c = 0.9
t_c = 15 min.
I_2 = 3.83 I_{100} = 7.37
A = 7.6 Ac.

Q_2 = 0.9 × 3.83 × 7.6
Q_2 = 26.2 cfs
Depth of St. Flow = 0.65'

Q_{100} = 0.9 × 7.37 × 7.6
Q_{100} = 50.4 cfs
Depth of St. Flow = 0.88'

Date 5-16-86 Page 2 of 4
Project Westway
Item Drainage

SUBAREA NO. 2

A. EXISTING CONDITIONS

Q = cIA
c = 0.3
t_c = 45 min.
I_2 = 2.08 I_{100} = 4.38
A = 1.3 Ac.

Q_2 = 0.3 × 2.08 × 1.3
Q_2 = 0.8 cfs
Depth of St. Flow = 0.17'

Q_{100} = 0.3 × 4.38 × 1.3
Q_{100} = 1.7 cfs
Depth of Street Flow = 0.24'

B. PROPOSED CONDITIONS

Q = cIA
c = 0.9
t_c = 15 min.
I_2 = 3.83 I_{100} = 7.37
A = 1.3

Q_2 = 0.9 × 3.83 × 1.3
Q_2 = 4.5 cfs

Q_{100} = 0.9 × 7.37 × 1.3
Q_{100} = 8.6 cfs

Date 5-16-86 Page 3 of 4
Project Westway
Item Drainage

SUBAREA NO. 3

A) EXISTING CONDITIONS

Q = cIA
c = 0.3
t_c = 30 min.
I_2 = 2.24 I_{100} = 4.66
A = 2.1 Ac.

Q_2 = 0.3 × 2.24 × 2.1
Q_2 = 1.4 cfs
Depth of St. Flow = 0.24'

Q_{100} = 0.3 × 4.66 × 2.1
Q_{100} = 2.9 cfs
Depth of St. Flow = 0.21'

B) PROPOSED CONDITIONS

Q = cIA
c = 0.9
t_c = 15 min.
I_2 = 3.83 I_{100} = 7.37
A = 2.1

Q_2 = 0.9 × 3.83 × 2.1
Q_2 = 7.2 cfs

Q_{100} = 0.9 × 7.37 × 2.1
Q_{100} = 13.9 cfs

Date May 6, 1986 Page 4 of 4
Project Westway
Item Drainage

SUBAREA NO. 4

A. Existing Conditions

Q = cIA
c = 0.3
t_c = 20 min.
I_2 = 2.33 I_{100} = 4.53
A = 0.8 Ac.

Q_2 = 0.3 × 2.33 × 0.8
Q_2 = 0.6 cfs

Q_{100} = 0.3 × 4.53 × 0.8
Q_{100} = 1.0 cfs

B. Proposed Conditions

Q = cIA
c = 0.9
t_c = 15 min.
I_2 = 3.83 I_{100} = 7.37
A = 0.8 Ac.

Q_2 = 0.9 × 3.83 × 0.8
Q_2 = 2.8 cfs

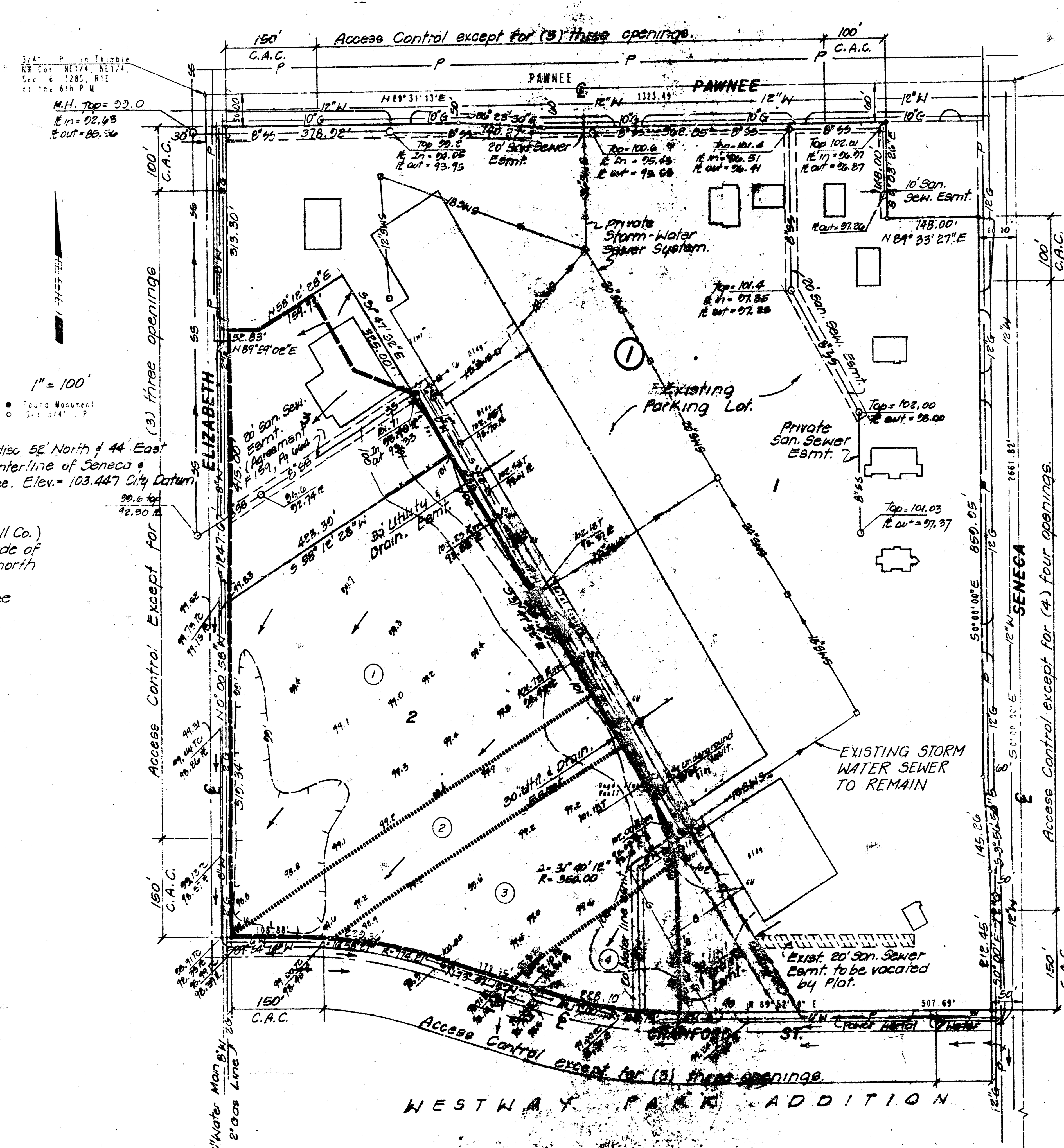
Q_{100} = 0.9 × 7.37 × 0.8
Q_{100} = 5.3 cfs

Notes:-
Underground Telep. (S.Western Bell Co.) along West side of Seneca, north side of Pawnee, east side of Elizabeth & north side of Crawford.
For buildings setbacks see C.U.P. D.P.-21 amended.
Date of Topo March 21, 1975

B.M. disc 52' North & 44' East of centerline of Seneca & Pawnee. Elev.= 103.447 City Datum

1" = 100'

● Found Monument
○ Set 3/4" I.P.



APPROVED DRAINAGE PLAN

DRAINAGE PLAN 5-16-86

WESTWAY

Wichita, Sedgwick County, Kansas

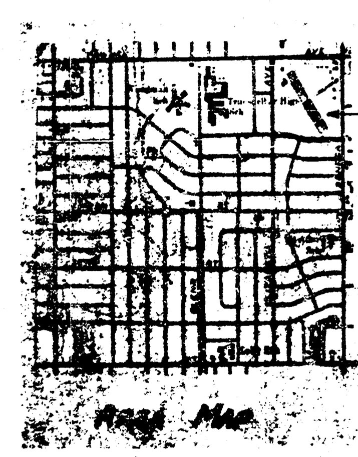
Owner/Developer: Phil Ruffin P.O. Box 17087 Wichita, Ks.

Engineer: P.E.C. p.a.
1440 English, Wichita, Ks. 67211

Notes:
1. Lots 1 & 3 shall continue to be drained via existing streets & private storm water sewer system.
2. Lot 2 shall be graded to drain to existing streets, gutters, and/or storm water sewer systems via drives, flumes, private storm sewers and/or other approved drainage facilities.
3. The combined 100-yr runoff from Sub-Basins 1 through 4 inclusive shall be limited [illegible] cfs.

LEGEND

- DRAINAGE BASIN BOUNDARY
- DRAINAGE SUB-BASIN BOUNDARY
- DRAINAGE FLOW DIRECTION
- (2) SUB-BASIN NUMBER



CHARLES S. BROWN 7281 KANSAS PROFESSIONAL ENGINEER

Revised 5-27-86

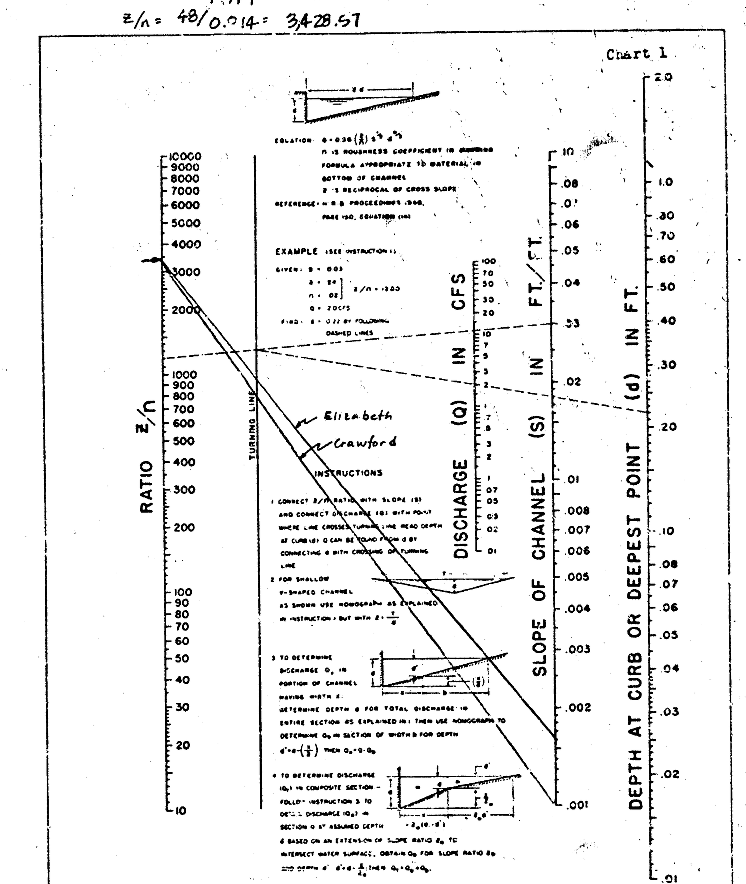
155

Comparision of Rainfall Intensities between Technical Paper No. 40, 1961 and NWS Hydro-35, 1977.

INTENSITIES (in/hr)

Frequency: / Time	2 Year Tech-40	2 Year Hydro-35	5 Year Tech-40	5 Year Hydro-35	10 Year Tech-40	10 Year Hydro-35	25 Year Tech-40	25 Year Hydro-35	50 Year Tech-40	50 Year Hydro-35	100 Year Tech-40	100 Year Hydro-35
5	6.23	5.57	8.01	6.53	9.34	7.41	10.77	8.52	[illegible]	9.43	[illegible]	[illegible]
6	5.80	5.32	7.46	[illegible]	8.70	7.09	10.01	8.16	11.44	9.09	12.83	[illegible]
7	5.46	5.09	7.02	[illegible]	8.19	6.81	9.41	7.84	10.77	8.74	12.03	[illegible]
8	5.19	4.89	6.67	5.75	7.78	6.55	8.92	7.55	10.22	8.42	11.47	[illegible]
9	4.95	4.70	6.37	5.54	7.43	6.31	8.51	7.28	9.76	8.13	[illegible]	[illegible]
10	4.75	4.52	6.11	5.34	7.13	6.09	8.16	7.04	9.37	7.86	[illegible]	[illegible]
11	4.53	4.36	5.89	5.16	6.87	5.89	7.86	6.81	[illegible]	7.61	10.13	[illegible]
12	4.43	4.21	5.69	4.99	6.64	5.71	7.59	6.60	8.73	7.38	9.79	[illegible]
13	4.29	4.08	5.52	4.84	6.44	5.53	7.35	6.41	[illegible]	7.17	[illegible]	[illegible]
14	4.17	3.95	[illegible]	4.67	6.25	5.37	7.13	6.23	8.22	6.97	9.22	7.57
15	4.06	3.83	5.22	4.56	6.09	5.22	6.94	6.06	8.00	6.78	8.97	7.37
16	3.96	3.72	5.09	4.43	5.94	5.08	6.76	5.90	7.80	6.60	8.75	[illegible]
17	3.87	3.61	4.97	4.31	5.80	4.95	6.60	5.75	7.62	6.44	[illegible]	[illegible]
18	3.73	3.51	4.86	4.20	5.67	4.83	6.45	5.61	7.45	6.29	[illegible]	6.84
19	3.70	3.42	4.76	4.10	5.55	4.71	6.31	5.47	7.29	6.14	[illegible]	[illegible]
20	3.63	3.33	4.66	4.00	5.44	4.60	[illegible]	5.35	7.15	6.00	8.02	[illegible]
21	3.56	3.25	4.58	3.90	5.34	4.50	6.07	5.23	7.02	5.87	7.87	[illegible]
22	3.50	3.17	4.49	3.81	5.24	4.40	5.95	5.12	6.89	5.75	7.73	6.26
23	3.44	3.10	4.42	3.73	5.15	4.31	5.85	5.01	6.77	5.63	7.60	6.13
24	3.38	3.03	4.34	3.65	5.07	4.22	5.75	4.91	6.66	5.52	7.47	6.03
25	3.33	2.96	4.27	3.57	4.99	4.13	5.66	4.81	6.55	5.41	7.35	5.90
26	3.22	2.90	4.21	3.50	4.91	4.05	5.57	4.72	6.45	5.31	7.24	5.79
27	3.13	2.84	4.15	3.43	4.84	3.98	5.49	4.63	6.36	5.21	7.13	5.69
28	3.04	2.78	4.09	3.37	4.83	3.90	5.41	4.55	6.27	5.12	7.03	[illegible]
29	2.96	2.72	4.03	3.30	4.70	3.83	5.33	4.47	6.19	5.03	6.94	5.49
30	2.89	2.67	3.94	3.24	4.58	[illegible]	[illegible]	4.39	6.10	4.94	[illegible]	5.40
31	2.81	2.62	3.84	3.19	4.46	3.70	[illegible]	4.32	6.03	4.86	6.03	5.32
32	2.75	2.57	3.75	3.13	4.35	3.64	5.11	4.25	5.88	4.78	5.89	5.23
33	2.68	2.52	3.66	3.08	4.25	3.58	4.99	4.18	5.75	4.71	5.72	5.15
34	2.62	2.48	3.57	3.03	4.15	3.52	4.87	4.11	5.60	4.63	5.60	5.07
35	2.56	2.44	3.49	2.98	4.06	3.46	4.76	4.05	5.47	4.56	5.47	[illegible]
36	2.51	2.39	3.41	2.93	3.97	3.41	4.66	3.99	5.35	4.50	5.35	[illegible]
37	2.46	2.35	3.34	2.88	3.89	3.36	4.56	3.93	5.23	4.43	5.23	4.86
38	2.41	2.32	3.27	2.84	3.81	3.31	4.46	3.87	5.12	4.37	5.12	[illegible]
39	2.36	2.28	3.20	2.80	3.73	3.26	4.37	3.82	5.02	4.31	5.02	4.73
40	2.31	2.24	3.14	2.76	3.66	3.22	4.29	3.76	4.91	4.25	4.91	[illegible]
41	2.27	2.21	3.08	2.72	3.59	3.17	4.20	3.71	4.82	4.19	4.82	[illegible]
42	2.23	2.18	3.02	2.68	3.52	3.13	4.12	3.66	4.73	4.13	4.73	4.54
43	2.19	2.14	2.97	2.64	3.46	3.09	4.05	3.61	4.64	4.03	4.64	4.49
44	2.15	2.11	2.91	2.61	3.40	3.05	3.97	3.57	4.55	4.03	4.55	4.43
45	2.11	2.08	2.86	2.57	3.34	3.01	3.90	3.52	4.47	3.98	4.47	4.33
46	2.08	2.05	2.81	2.54	3.28	2.97	3.84	3.48	4.39	3.93	4.39	[illegible]
47	2.04	2.02	2.77	2.50	3.23	2.93	3.77	3.44	4.32	3.88	4.32	[illegible]
48	2.01	2.00	2.72	2.47	3.17	2.90	3.71	3.39	4.25	3.84	4.25	4.23
49	1.98	1.97	2.68	2.44	3.12	2.86	3.65	3.35	4.18	3.79	4.18	[illegible]
50	1.95	1.94	2.63	2.41	3.07	2.83	3.59	3.32	4.11	3.75	4.11	[illegible]
51	1.92	1.92	2.59	2.38	3.03	2.79	3.54	3.28	4.05	3.71	4.05	[illegible]
52	1.89	1.89	2.55	2.35	2.98	2.76	3.48	3.24	3.98	3.67	3.98	[illegible]
53	1.86	1.87	2.51	2.33	2.94	2.73	3.43	3.20	3.92	3.63	3.92	[illegible]
54	1.84	1.85	2.48	2.30	2.89	2.70	3.38	3.17	3.87	3.59	3.87	[illegible]
55	1.81	1.82	2.44	2.27	2.85	2.67	3.33	3.14	3.81	3.55	3.81	3.92
56	1.78	1.80	2.41	2.25	2.81	2.64	[illegible]	[illegible]	3.75	3.51	3.75	[illegible]
57	1.76	1.78	2.37	2.22	2.78	2.61	3.24	3.07	3.70	3.48	3.70	[illegible]
58	1.74	1.76	2.34	2.20	2.74	2.59	3.20	3.04	3.65	3.44	3.65	[illegible]
59	1.71	1.74	2.31	2.18	2.70	2.56	3.15	3.01	3.60	3.41	3.60	3.77
60	1.69	1.72	2.28	2.15	2.67	2.53	3.11	2.98	3.55	3.37	3.55	3.73
61	1.67	1.70	2.25	2.13	2.63	2.51	3.07	2.95	3.51	3.34	3.51	3.70

Westway
cross-slope = 1/4"/Ft
long. slope = 0.16 %
n = 0.014
$Z = \frac{1}{1/4"/Ft} = \frac{1}{0.020833} = 48$
$Z/n = 48/0.014 = 3428.57$



BUREAU OF PUBLIC ROADS
REV. JAN. 1968

NOMOGRAPH FOR FLOW IN TRIANGULAR CHANNELS