DRAINAGE PLAN
AND
SUPPORTING CALCULATIONS

PROFESSIONAL
ENGINEERING
CONSULTANTS
PROFESSIONAL ASSOCIATION

FOR
SOCORA VILLAGE
AN ADDITION TO
WICHITA, SEDGWICK COUNTY, KANSAS

PREPARED BY
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

JUNE 19, 1992

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Project Socora Village

Item Drainage Plan - Existing Conditions

A portion of the subject property is in the benefit district of Storm Water Sewer 145. City of Wichita calculations are unavailable.

Determine estimated Q_2 used in the design of SWS # 145:

Use Rational Method $Q = CIA$

$C = 0.5$ (Assumed)

$I = 4.06$ From Tech Paper 40 $t_c = 15$ min.

$A = 34.6$ Ac (Area of Lots in Benefit Dist.

$Q_2 = 0.5 \times 4.06 \times 34.6$

$= 70.2$ cfs

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Item Drainage Plan System 100

I HYDROLOGY Use Rational Method Q=CIA

Determine "C"

Node	Soil Type	Hyd. Group	Land Use	C_2	C_{100}
110	Ma	B	Res - 1/4 Ac	0.44	0.61
109	Ma	B	Res - 1/4 Ac	0.44	0.61
108	50% Ma 50% Ba	B C	Res - 1/4 Ac	0.46	0.65
107	Ma	B	Res - 1/4 Ac	0.44	0.61
106	60% Ma 40% Ba	B C	Res - 1/4 Ac.	0.45	0.63
105	40% Ma 60% Ba	B C	Res - 1/4 Ac.	0.47	0.66
104	50% Ma 50% Ba	B C	Res - 1/4 Ac.	0.46	0.65
103	Ba	C	Res - 1/4 Ac.	0.48	0.68
102	Ba	C	Res - 1/4 Ac	0.48	0.68
101	Ba	C	Res - 1/4 Ac.	0.48	0.68
100	Connection Point				

Determine "I"

Assume t_c = 15 minutes all nodes ∴ $I_2 = 3.83$ $I_{100} = 7.37$

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Determine "A"

Node	Plan. Units	Area (SF)	Area (Ac.)
110	9.46	94,600	2.17
109	41.28	412,800	9.47
108	3.10	31,000	0.71
107	14.88	148,800	3.42
106	34.90	349,000	8.01
105	14.88	148,800	3.42
104	27.16	271,600	6.24
103	10.96	109,600	2.52
102	6.30	63,000	1.44
101	1.85	18,500	0.42
100	Connection Point		

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Determine "Q_2"

Node	C_2	I_2	A	Q_2
110	0.44	3.83	2.17	3.7
109	0.44	3.83	9.47	16.0
108	0.46	3.83	0.71	1.3
107	0.44	3.83	3.42	5.8
106	0.45	3.83	8.01	13.8
105	0.47	3.83	3.42	6.2
104	0.46	3.83	6.24	11.0
103	0.48	3.83	2.52	4.6
102	0.48	3.83	1.44	2.6
101	0.48	3.83	0.42	0.8
100	Connection point			

$\Sigma =$ 65.8 cfs

Total Q_2 of 65.8 cfs is less than the estimated existing Q_2 used for design of SWS 145. See section entitled "Existing Conditions".

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Item Drainage Plan System 100

Determine "Q_{100}"

Node	C_{100}	I_{100}	A	Q_{100}
110	0.61	7.37	2.17	9.8
109	0.61	7.37	9.47	42.6
108	0.65	7.37	0.71	3.4
107	0.61	7.37	3.42	15.4
106	0.63	7.37	8.01	37.2
105	0.66	7.37	3.42	16.6
104	0.65	7.37	6.24	29.9
103	0.68	7.37	2.52	12.6
102	0.68	7.37	1.44	7.2
101	0.68	7.37	0.42	2.1
100	Connection Point			

$\Sigma =$ 176.8 cfs

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Item Drainage Plan - System 100

II INLET SIZING

Node	Inlet Condition	Qz #	5' inlet * Qallow	10' inlet * Qallow	Use	
110	Sump	3.7	11.0	22.0	1 - 5'	Type 1A
109	Sump	16.0	11.0	22.0	1 - 10'	Type 1A
108	Sump	1.3	11.0	22.0	1 - 5'	Type 1A
107	Sump	5.8	11.0	22.0	1 - 5'	Type 1A
106	Sump	13.8	11.0	22.0	1 - 10'	Type 1A
105	Sump	6.2	11.0	22.0	1 - 5'	Type 1A
104	Sump	11.0	11.0	22.0	1 - 5'	Type 1A
103	Sump	4.6	11.0	22.0	1 - 5'	Type 1A
102	Sump	2.7	11.0	22.0	1 - 5'	Type 1A
101	Sump	0.8	11.0	22.0	1 - 5'	Type 1A
100	Connection Point					

Input Q in computer program "Storm"

* Based on Ponding elev. @ T.C.

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Item Drainage Plan - System 100

III STREET FLOW - 2yr

Node	Q_2	Distribution	st. slope	d	dmax	comment
110	3.7	100% (W) = 3.7	0.5%	0.31'	0.55'	OK
109	16.0	80% (W) = 12.8	0.8%	0.45'	0.55'	OK
		20% (N) = 3.2	0.32%	0.30	0.30'	OK
108	1.3	≈ 100% (W) = 1.3	0.8%	0.20'	0.55'	OK
107	5.8	50% (W) = 2.9	0.8%	0.27'	0.55'	OK
		50% (N) = 2.9	0.32%	0.29'	0.30'	OK
106	13.8	10% (W) = 1.4	0.5%	0.22'	0.55'	OK
		90% (S) = 12.4	0.32%	0.51'	0.55'	OK
105	6.2	50% (W) = 3.1	0.5%	0.30'	0.55'	OK
		50% (N) = 3.1	0.32%	0.30'	0.30'	OK
104	11.0	90% (W) = 9.9	0.6%	0.44'	0.55'	OK
		10% (S) = 1.1	0.32%	0.22'	0.55'	OK
103	4.6	100% (W) = 4.6	0.60%	0.33'	0.55'	OK
102	2.6	50% (N) = 2.3	0.32%	0.28'	0.55'	OK
		50% (S) = 2.3	0.32%	0.28'	0.55'	OK
101	0.8	100% (N) = 0.8	0.32%	0.20'	0.55'	OK

Project Socora Village

Item Drainage Plan System 100

IV STREET FLOW - 100-YR

$Q_{street} = Q_{100} - Q_{pipe}$

Location	Contributing Area	Q_{100}	Q_{pipe}	Q_{street}	street slope	Q_{max}	comment
Approaching	100% 110 =	9.8					
Nodes 110, 109	80% 109 =	34.0					
(w)		43.8	0.0	43.8	0.8%	78.9	OK Std. Cb. 0.3' wk Gr
Approaching	100% 110 =	9.8	3.7				
Nodes 108, 107	100% 109 =	42.6	16.0				
(w)	100% 108 =	3.4					
	50% 107 =	7.7					
		63.5	19.7	43.8	0.8%	78.9	OK Std. Cb. 0.3' Wk. Gr.
Approaching	100% 110 =	9.8	3.7				
Nodes 106, 105	100% 109 =	42.6	16.0				
(w)	100% 108 =	3.4	1.3				
	100% 107 =	15.4	5.8				
	10% 106 =	3.7					
	50% 105 =	8.3					
		83.2	26.8	56.4	0.5%	62.4	OK Std. Cb. 0.3' wk. Gr.
Approaching	100% 110 =	9.8	3.7				
Nodes 104, 103	100% 109 =	42.6	16.0				
(w)	100% 108 =	3.4	1.3				
	100% 107 =	15.4	5.8				
	100% 106 =	37.2	13.8				
	100% 105 =	16.6	6.2				
	100% 104 =	29.9					
	100% 103 =	12.6					
		167.0	46.8	120.2	0.65%	123.7	OK Std. Cb. 0.5' wk. Gr.

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Location	Contributing Area	Q_{100}	Qpipe	Q_{street}	street slope	Q_{max}	Comment
Approaching Nodes 106 + 105 (S)	100% 106 = 100% 104 =	37.2 29.2 66.4	0.0	66.4	0.32%	75.1	OK Std. Cb. 0.5' Wk.Gr.

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Project Socora Village

Item Drainage Plan System 200

System 200 as shown on the enclosed Drainage Plan Drawing is covered by Northwest Village Drainage Plan dated Sept. 10, 1980 (Revised edition)

Sizes shown on this drainage plan are in accordance with the Northwest Village Drainage Plan.

UNTY, KANSAS — SHEET NUMBER 33

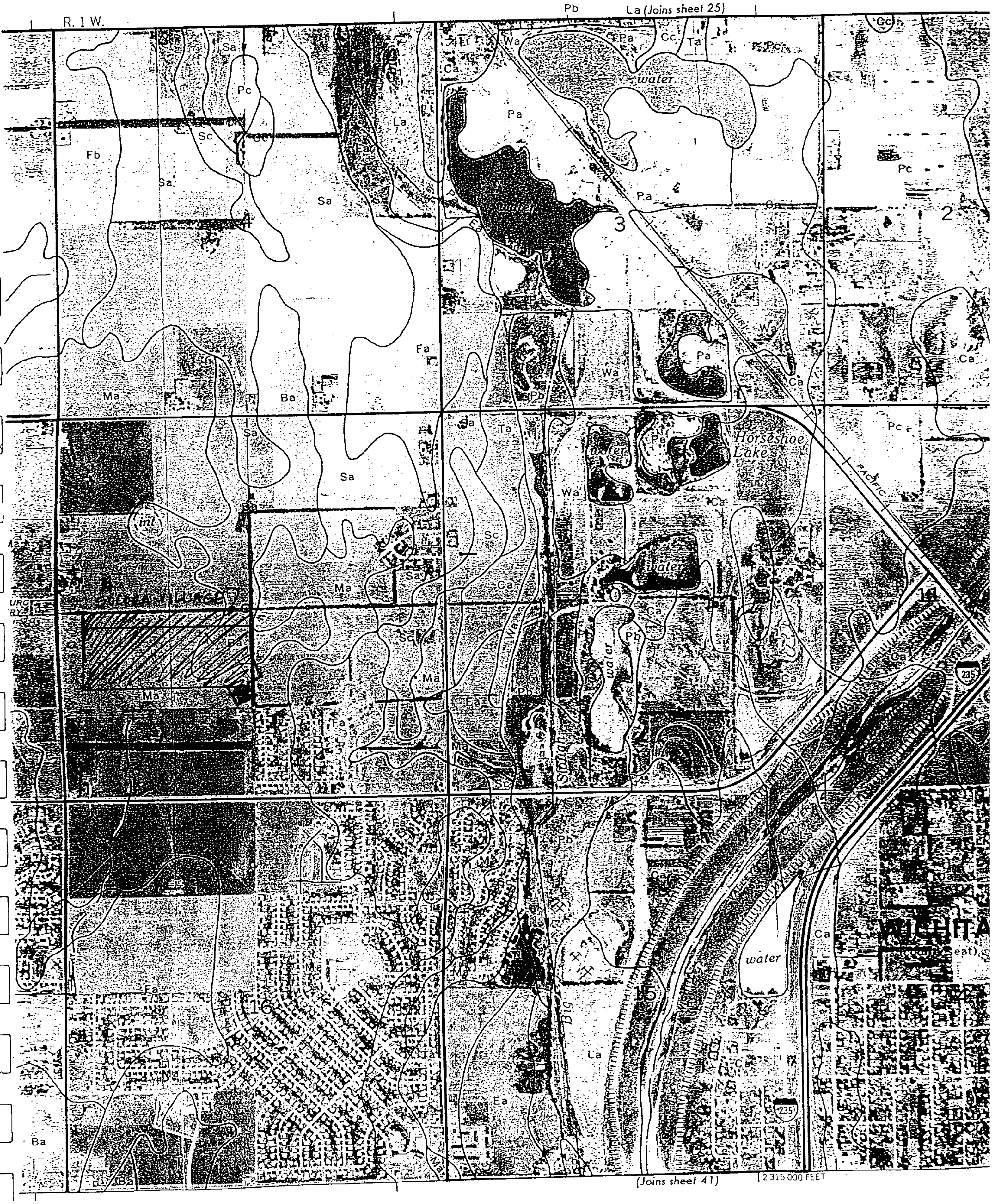


EXHIBIT NO. 1

SOIL LEGEND

SYMBOL	HYDROLOGIC GROUP	NAME
Aa	B	Albion-Shellabarger sandy loams, 1 to 4 percent slopes
Ab	B	Albion and Shellabarger sandy loans, 7 to 15 percent slopes
Ba	C	Blanket silt loam, 0 to 1 percent slopes
Bb	C	Blanket silt loan, 1 to 3 percent slopes
Ca	B	Canadian fine sandy loan
Cb	B	Canadian-Waldeck fine sandy loams
Cc	D	Carwile fine sandy loam
Cd	B	Clark-Ost clay loams, 1 to 4 percent slopes
Ce	C	Clime silty clay, 3 to 6 percent slopes
Ea	B	Elandco silt loam
Eb	B	Elandco silt loam, occasionally flooded
Ec	B	Elandco silt loam, frequently flooded
Fa	B	Farnum loam, 0 to 1 percent slopes
Fb	B	Farnum loam, 1 to 3 percent slopes
Fc	B	Farnum loam, sandy substratum, 0 to 1 percent slopes
Ga	D	Goessel silty clay, 0 to 1 percent slopes
Gb	D	Goessel silty clay, 1 to 2 percent slopes
Ia	D	Irwin silty clay loam, 1 to 3 percent slopes
Ib	D	Irwin silty clay loam, 3 to 6 percent slopes
Ic	D	Irwin silty clay loam, 2 to 6 percent slopes, eroded
La	C	Lesho loam
Lb	A	Lincoln soils
Ma	B	Milan loam, 1 to 3 percent slopes
Mb	B	Milan form, 3 to 6 percent slopes
Mc	B	Milan clay loam, 2 to 6 percent slopes, eroded
Na	B	Naron fine sandy loam
Oc	D	Owens clay loam, 1 to 3 percent slopes
Od	D	Owens-Rock outcrop complex, 3 to 10 percent slopes
Pa		Pits
Pb	D	Plevna fine sandy loam
Pc	A	Pratt loamy fine sand, undulating
Pd	A	Pratt-Tivoli complex, rolling
Ra	D	Renfrow silty clay loam, 1 to 3 percent slopes
Rb	D	Renfrow silty clay loam, 3 to 6 percent slopes
Rc	D	Renfrow-Owens clay loams, 1 to 4 percent slopes
Rd	D	Rosehill silty clay, 1 to 3 percent slopes
Sa	B	Shellabarger sandy loam, 1 to 3 percent slopes
Sb	B	Shellabarger sandy loam, 3 to 6 percent slopes
Sc	B	Shellabarger sandy loam, 3 to 6 percent slopes, eroded
Ta	D	Tabler silty clay loam
Tb	D	Tabler-Drummond complex
Ua	B	Urban land-Canadian complex
Ub	B	Urban land-Elandco complex
Uc	B	Urban land-Farnum complex, 0 to 3 percent slopes
Ud	D	Urban land-Irwin complex, 1 to 3 percent slopes
Ue	D	Urban land-Tabler complex
Va	B	Vanoss silt loam, 0 to 1 percent slopes
Vb	B	Vanoss silt loam, 1 to 3 percent slopes
Vc	B	Vanoss silt loam, 3 to 6 percent slopes
Vd	B	Vanoss silt loam, 3 to 6 percent slopes, eroded
Ve	D	Vernon sandy loam, 1 to 3 percent slopes
Vf	D	Vernon sandy loam, 3 to 6 percent lopes
Wa	C	Waldeck sandy loam

April 15, 1986

ATTACHMENT A
DRAINAGE CRITERIA MANUAL

CITY OF WICHITA, KANSAS

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 Modified to NWS Hydro-35, 1977 During First Hour

DURATION IN MINUTES	RETURN PERIODS OF 1-YR	2-YR	5-YR	10-YR	25-YR	50-YR	100-YR
5	4.18	5.57	6.53	7.41	8.52	9.48	10.32
6	3.99	5.32	6.25	7.09	8.16	9.09	9.89
7	3.81	5.09	5.99	6.81	7.84	8.74	9.50
8	3.66	4.89	5.75	6.55	7.55	8.42	9.15
9	3.52	4.70	5.54	6.31	7.28	8.13	8.83
10	3.39	4.52	5.34	6.09	7.04	7.86	8.54
11	3.27	4.36	5.16	5.89	6.81	7.61	8.27
12	3.18	4.21	4.99	5.71	6.60	7.38	8.02
13	3.05	4.08	4.84	5.53	6.41	7.17	7.79
14	2.96	3.95	4.69	5.37	6.23	6.97	7.57
15	2.87	3.83	4.56	5.22	6.06	6.78	7.37
16	2.78	3.72	4.43	5.08	5.90	6.60	7.18
17	2.71	3.61	4.31	4.95	5.75	6.44	7.00
18	2.63	3.51	4.20	4.83	5.61	6.29	6.84
19	2.56	3.42	4.10	4.71	5.47	6.14	6.68
20	2.50	3.33	4.00	4.60	5.35	6.00	6.53
21	2.44	3.25	3.90	4.50	5.23	5.87	6.39
22	2.38	3.17	3.81	4.40	5.12	5.75	6.26
23	2.32	3.10	3.73	4.31	5.01	5.63	6.13
24	2.27	3.03	3.65	4.22	4.91	5.52	6.01
25	2.22	2.96	3.57	4.13	4.81	5.41	5.90
26	2.20	2.90	3.50	4.05	4.72	5.31	5.79
27	2.16	2.84	3.43	3.98	4.63	5.21	5.69
28	2.14	2.78	3.37	3.90	4.55	5.12	5.59
29	2.11	2.72	3.30	3.83	4.47	5.03	5.49
30	2.08	2.67	3.24	3.76	4.39	4.94	5.40
31	2.05	2.62	3.19	3.70	4.32	4.86	5.32
32	2.02	2.57	3.10	3.63	4.25	4.79	5.22
33	1.99	2.52	3.05	3.57	4.18	4.71	5.14
34	1.96	2.48	3.01	3.51	4.11	4.63	5.07
35	1.93	2.44	2.98	3.46	4.05	4.56	5.00
36	1.91	2.39	2.93	3.41	3.99	4.50	4.93
37	1.89	2.35	2.88	3.36	3.93	4.43	4.86
38	1.87	2.32	2.84	3.31	3.87	4.37	4.79
39	1.85	2.28	2.80	3.26	3.82	4.31	4.73
40	1.83	2.24	2.76	3.22	3.76	4.25	4.66
41	1.81	2.21	2.72	3.17	3.71	4.19	4.60
42	1.79	2.18	2.68	3.13	3.66	4.13	4.54
43	1.77	2.14	2.64	3.09	3.61	4.08	4.49
44	1.75	2.11	2.61	3.05	3.57	4.03	4.43
45	1.73	2.08	2.57	3.01	3.52	3.98	4.38

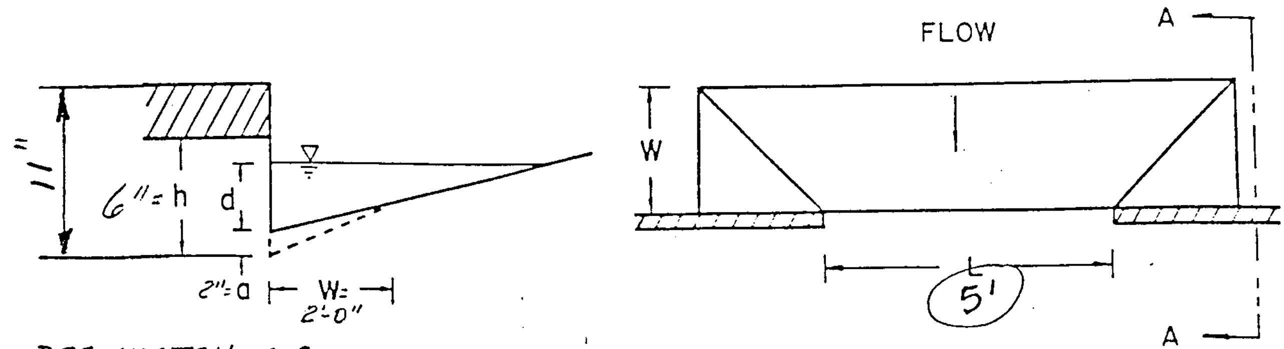
ATTACHMENT D

DRAINAGE CRITERIA

CITY OF WICHITA, KANSAS

RECOMMENDED RUNOFF COEFFICIENTS FOR RATIONAL METHOD
AND PERCENT IMPERVIOUS FOR UNIT HYDROGRAPH METHOD

Land Use or Surface Characteristics	Percent Impervious	Frequency			
		2	5	10	100
1. Business:					
Downtown Areas	95	0.84	0.85	0.87	0.91
Neighborhood Areas	70	0.68	0.69	0.73	0.80
2. Residential:					
Single Family (Soil Group D)					
1/8 Acre	50	0.57	0.61	0.66	0.79
1/4 Acre	38	0.50	0.54	0.62	0.76
1/3 Acre	30	0.46	0.50	0.59	0.73
1/2 Acre	25	0.42	0.48	0.56	0.72
3/4 Acre	22	0.42	0.46	0.55	0.71
1 Acre	20	0.41	0.45	0.54	0.71
Multi-Family (Soil Group D)					
Multi-Unit (detached)	60	0.62	0.66	0.72	0.82
Multi-Unit (attached)	65	0.64	0.68	0.73	0.83
Apartments	75	0.70	0.73	0.79	0.86
Single Family (Soil Group C)					
1/8 Acre	50	0.55	0.58	0.64	0.73
1/4 Acre	38	0.48	0.51	0.57	0.68
1/3 Acre	30	0.43	0.46	0.53	0.65
1/2 Acre	25	0.40	0.43	0.50	0.63
3/4 Acre	22	0.39	0.42	0.49	0.62
1 Acre	20	0.37	0.40	0.48	0.61
Multi-Family (Soil Group C)					
Multi-Unit (detached)	60	0.60	0.63	0.69	0.77
Multi-Unit (attached)	65	0.63	0.66	0.71	0.79
Apartments	75	0.68	0.72	0.77	0.83
Single-Family (Soil Group B)					
1/8 Acre	50	0.52	0.54	0.59	0.67
1/4 Acre	38	0.44	0.46	0.52	0.61
1/3 Acre	30	0.39	0.41	0.47	0.57
1/2 Acre	25	0.36	0.38	0.44	0.54
3/4 Acre	22	0.34	0.36	0.42	0.52
1 Acre	20	0.33	0.35	0.40	0.51
Multi-Family (Soil Group B)					
Multi-Unit (detached)	60	0.58	0.60	0.65	0.72
Multi-Unit (attached)	65	0.61	0.64	0.68	0.75
Apartments	75	0.67	0.70	0.74	0.80



DEF. SKETCH, C.O.W. TYPE 1A INLET

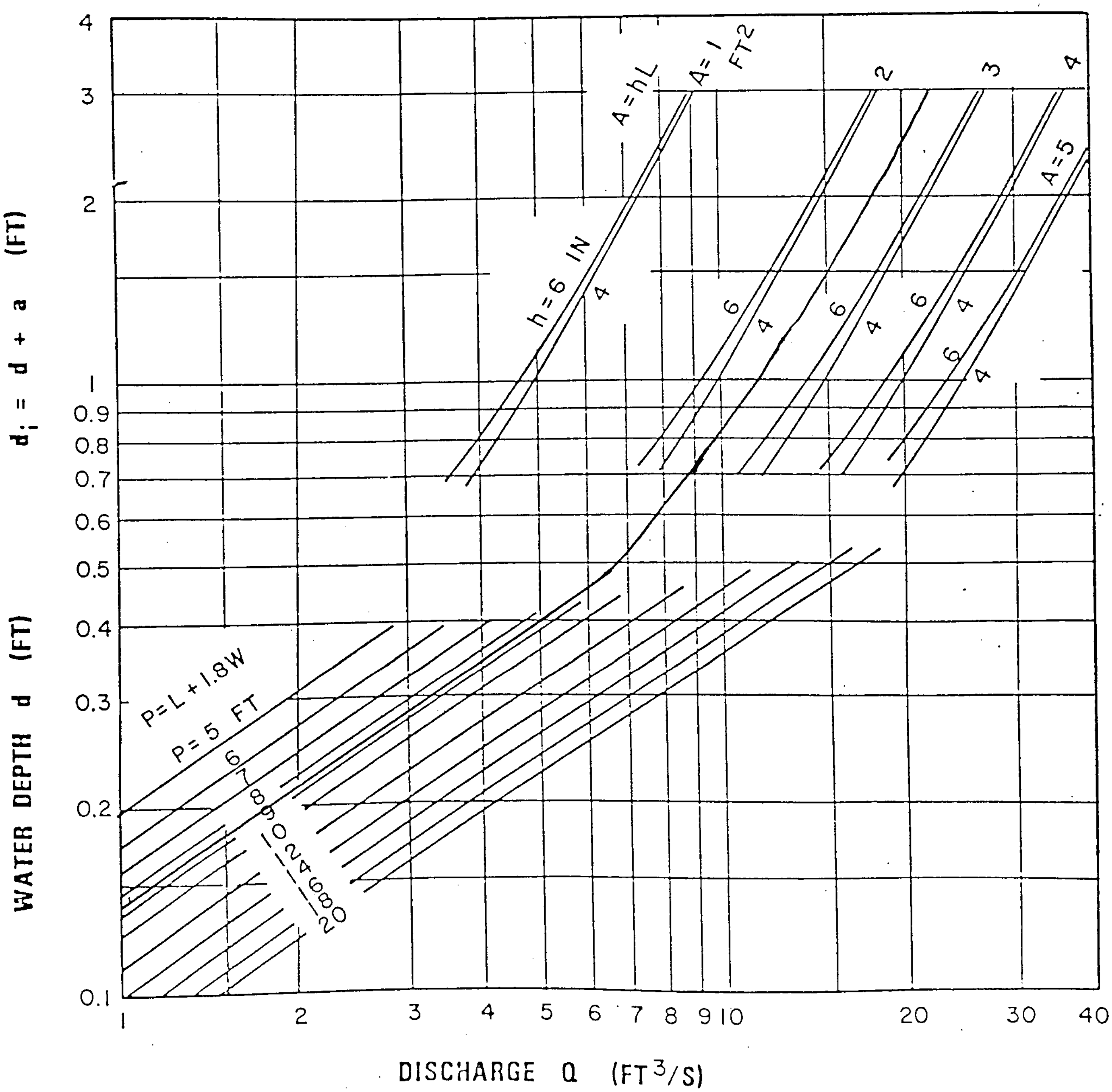
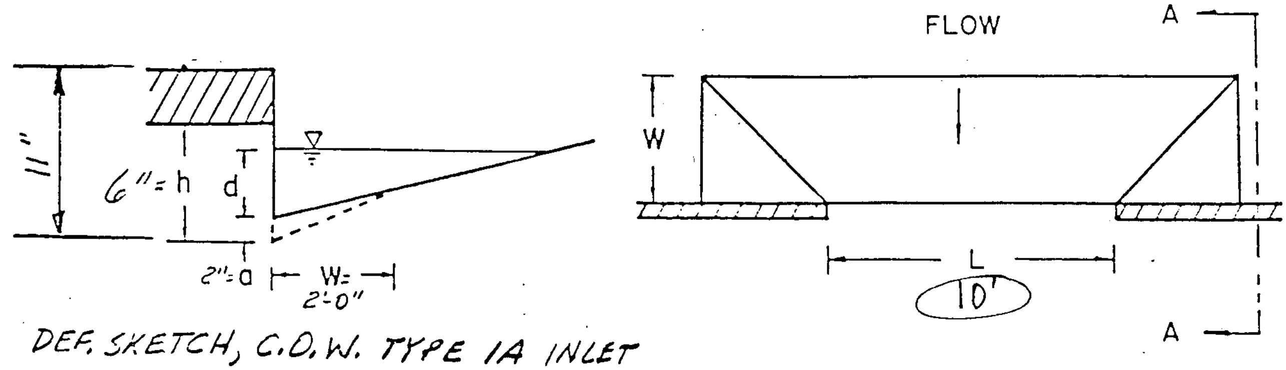


CHART 12. Depressed curb-opening inlet capacity in sump locations.

FROM: HEC-12, Drainage of Highway Pavements, F.H.W.A., MAR., 1984



DEF. SKETCH, C.O.W. TYPE 1A INLET

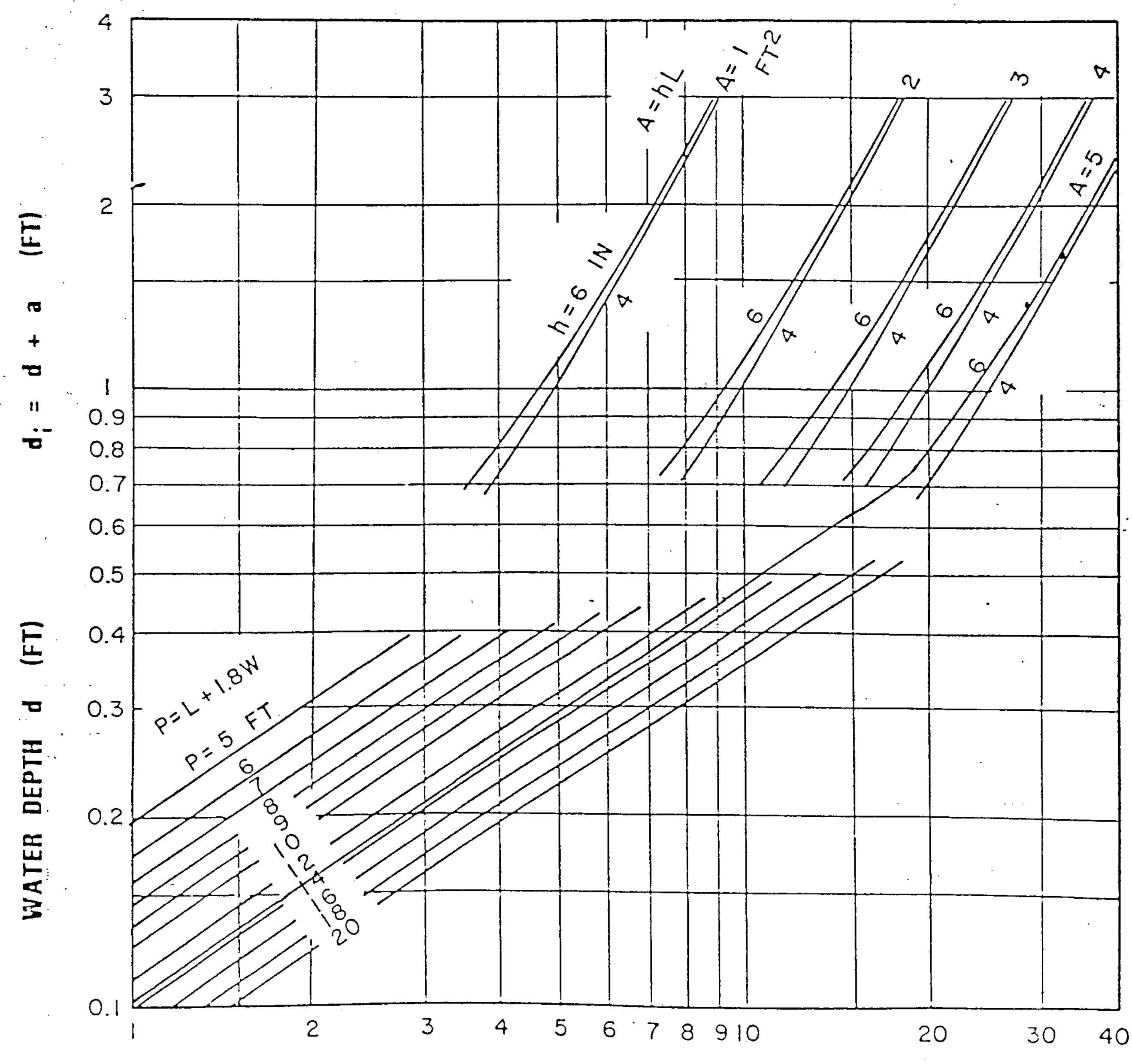
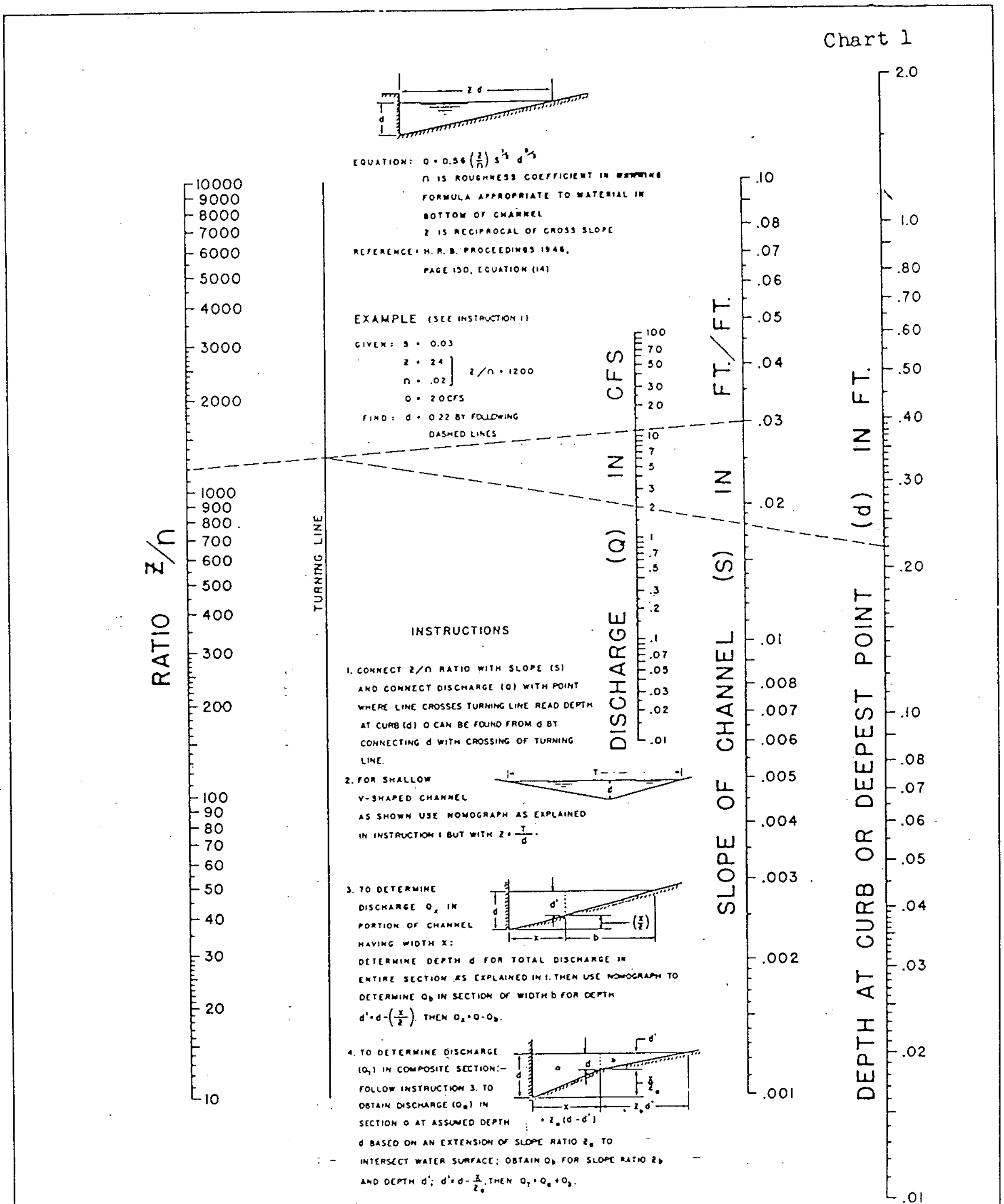


CHART 12. Depressed curb-opening inlet capacity in sump locations.

FROM: HEC-12, DRAINAGE OF HIGHWAY PAVEMENTS, F.H.W.A., MAR., 1984



BUREAU OF PUBLIC ROADS
REV. JAN. 1968

NOMOGRAPH FOR FLOW IN TRIANGULAR CHANNELS

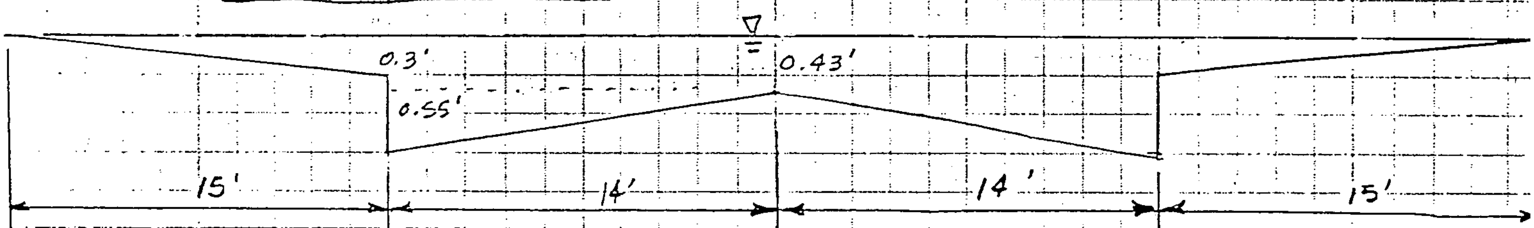
Date ______ Page ______ of ______

Project ______

Item Drainage Plan

Determine Capacities of Standard Curb Streets w/ Various Walk Grades for 100-year storm analysis (58' R-O-W)

0.3' WALK GRADE



$$n = \frac{(2 \times 14.5 \times 0.03) + (2 \times 3.05 \times 0.013) + (2 \times 12 \times 0.016)}{59.1}$$

$$= \frac{(0.87) + (0.0793) + (0.384)}{59.1} = \frac{1.3333}{59.1} = 0.0226$$

$$A = (2 \times \tfrac{1}{2} \times 15 \times 0.3) + (28 \times 0.43) + (2 \times \tfrac{1}{2} \times 14 \times 0.42)$$

$$= (4.5) + (12.04) + (5.88)$$

$$= 22.42$$

$p = 59.1$

$R = A/p = 22.42/59.1 = 0.379357$ $R^{2/3} = 0.52404$

$$Q = \frac{1.486}{n} A R^{2/3} S^{1/2}$$

$$Q = \frac{1.486}{0.0226} \times 22.42 \times 0.52404 \times S^{1/2}$$

$$Q = 772.5 \sqrt{S}$$

PROFESSIONAL ENGINEERING CONSULTANTS

Date ______ Page ____ of ____

Project ______

Item Drainage Plan

58' R-O-W
Std. Curb

0.4' WALK GRADE

n = 0.0226

A = (2 × 1/2 × 15 × 0.4) + (28 × 0.53) + (2 × 1/2 × 14 × 0.42)

= (6.00) + (14.84) + (5.88)

= 26.72

p = 59.1

R = A/p = 26.72/59.1 = 0.452115 $R^{2/3}$ = 0.589069

$Q = \frac{1.486}{n} A R^{2/3} S^{1/2}$

$Q = \frac{1.486}{0.0226} \times 26.72 \times 0.589069 \times S^{1/2}$

$Q = 1{,}034.93 \sqrt{S}$

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Item Drainage Plan

58' R-O-W
Std Curb

0.5' WALK GRADE

$n = 0.0226$

$A = (2 \times 1/2 \times 15 \times 0.5) + (28 \times 0.63) + (2 \times 1/2 \times 14 \times 0.42)$

$= (7.5) + (17.64) + (5.88)$

$= 31.02$ SF

$p = 59.1$

$R = A/p = 31.02/59.1 = 0.524873$ $R^{2/3} = 0.650683$

$Q = \frac{1.486}{n} A R^{2/3} \cdot s^{1/2}$

$Q = \frac{1.486}{0.0226} \times 31.02 \times 0.650683 \times s^{1/2}$

$Q = 1,327.15 \sqrt{s}$

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Item Drainage Plan

58' R-O-W
Std. Curb

0.6' WALK GRADE

$n = 0.0226$

$A = (2 \times 1/2 \times 15 \times 0.6) + (28 \times 0.73) + (2 \times 1/2 \times 14 \times 0.42)$

$= (9.0) + (20.44) + (5.88)$

$= 35.32$

$p = 59.1$

$R = A/p = 35.32/59.1 = 0.597631 \qquad R^{2/3} = 0.709505$

$$Q = \frac{1.486}{n} A R^{2/3} S^{1/2}$$

$$Q = \frac{1.486}{0.0226} \times 35.32 \times 0.709505 \times S^{1/2}$$

$$Q = 1{,}647.73 \sqrt{S}$$

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Item Drainage Plan

58' R-O-W
Std Curb

0.7' WALK GRADE

$n = 0.0226$

$A = (2 \times 1/2 \times 15 \times 0.7) + (28 \times 0.83) + (2 \times 1/2 \times 14 \times 0.42)$

$= (10.5) + (23.24) + (5.88)$

$= 39.62$

$p = 59.1$

$R = A/p = 39.62/59.1 = 0.670389 \quad R^{2/3} = 0.765981$

$Q = \frac{1.486}{n} A R^{2/3} S^{1/2}$

$Q = \frac{1.486}{0.0226} \times 39.62 \times 0.765981 \times S^{1/2}$

$Q = 1{,}995.46 \sqrt{S}$

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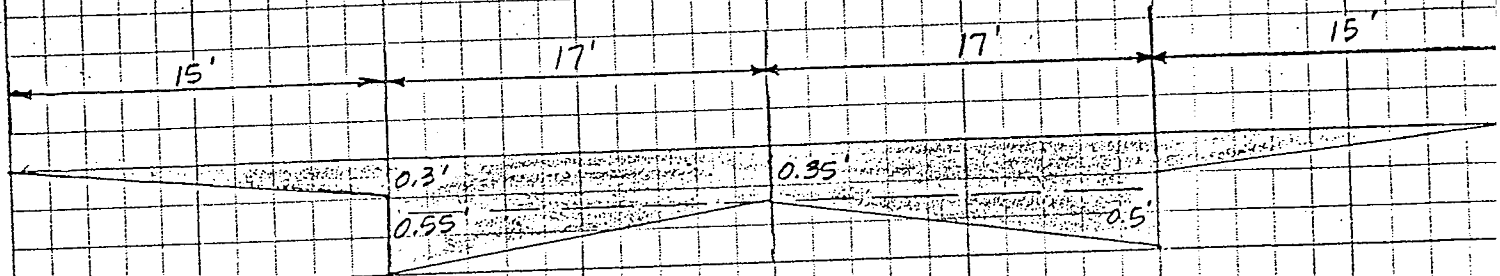
Item *Drainage Plan*

Check Street Flow 100-YR (Walk Grade +0.3')



Determine Qmax in Street R-O-W

Use Mannings Eq'n $Q = \frac{1.486}{n} A R^{2/3} S^{1/2}$

$n = \frac{2(14.5 \times 0.030) + 2(1.05' \times 0.013) + 2(17 \times 0.016)}{65.1}$

$n = 1.4413/65.1 = 0.0221$

$A = 2(\frac{1}{2} \times 15 \times 0.3) + (34 \times 0.35) + 2(\frac{1}{2} \times 0.5 \times 17)$

$= 24.90$ SF

$P = (2 \times 15) + (2 \times 17) + (2 \times 0.55)$

$= 65.1'$

$R = A/P = 24.9/65.1 = 0.38249$

$R^{2/3} = 0.527$

$Q = \frac{1.486}{0.0221} \times 24.90 \times 0.527 \times S^{1/2}$

$Q = 882.3 \times S^{1/2}$

49.9

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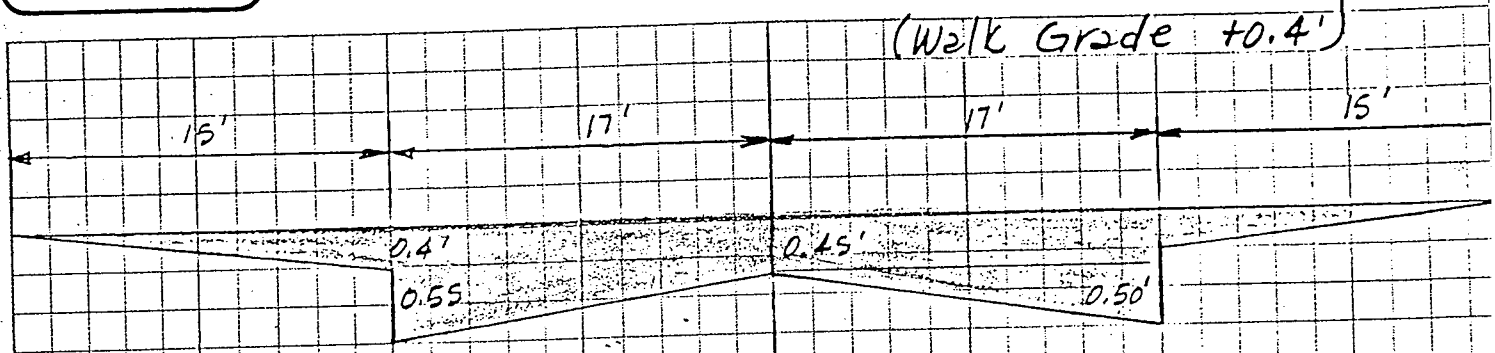
Item *Drainage Plan*



$n: 0.0221$ (see previous sheet)

$A = 2(\frac{1}{2} \times 15' \times 0.4') + (34 \times 0.45') + 2(\frac{1}{2} \times 17 \times 0.5')$

$= 29.8$ SF

$P = 65.1'$

$R = A/P = 29.8/65.1 = 0.4577$

$R^{2/3} = 0.594$

$Q = \frac{1.486}{0.0221} \times 29.8 \times 0.594 \times S^{1/2}$

$Q = 1{,}190.2\ S^{1/2}$

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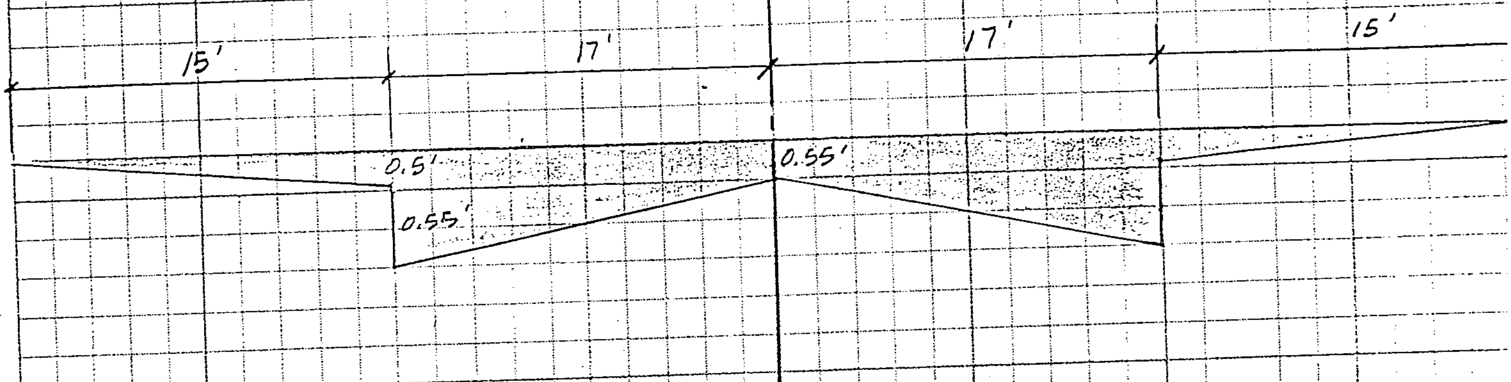
CHECK STREET FLOW 100-YR (WALK GRADE = 0.5')



$n = 0.0221$ (see previous sheet)

$A = 2(\frac{1}{2} \times 15 \times 0.5) + (34 \times 0.55) + 2(\frac{1}{2} \times 17 \times 0.5)$

$= 34.7$ SF

$P = 65.1$

$R = A/P = 34.7/65.1 = 0.5330$

$R^{2/3} = 0.6574$

$Q_{max} = \frac{1.486}{0.0221} \times 34.7 \times 0.6574 \times S^{1/2}$

$Q_{max} = 1{,}533.9\ S^{1/2}$

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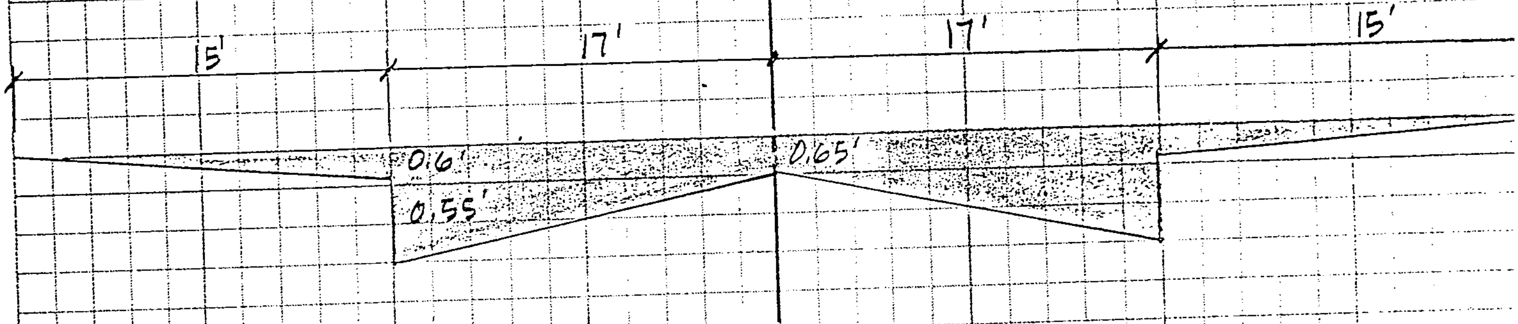
Item Drainage Plan

CHECK STREET FLOW 100-YEAR (WALK GRADE = 0.6')



$n = 0.0221$ (see previous sheet)

$A = 2(1/2 \times 15 \times 0.6) + (34 \times 0.65) + 2(1/2 \times 17 \times 0.5)$

$= 39.6$ SF

$P = 65.1'$

$R = A/P = 39.6/65.1 = 0.6083$

$R^{2/3} = 0.71792$

$Q_{max} = \frac{1.486}{0.0221} \times 39.6 \times 0.71792 \times S^{1/2}$

$Q_{max} = 1{,}911.6\ S^{1/2}$

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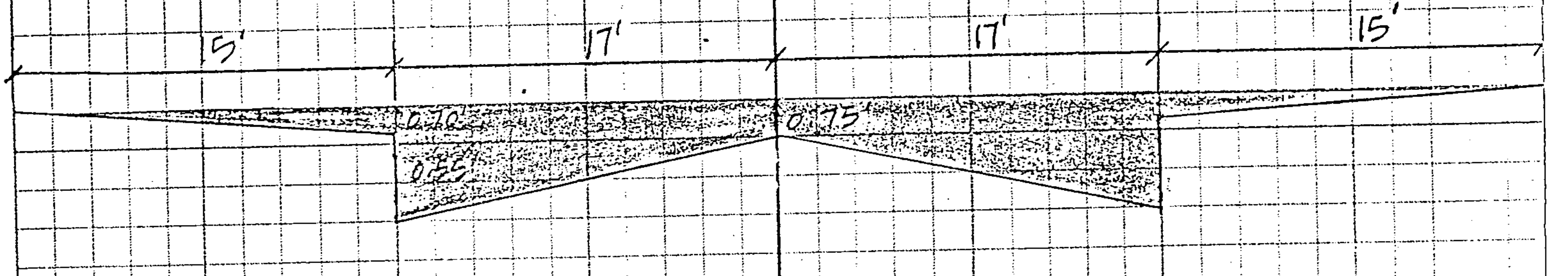
Item *Drainage Plan.*

CHECK STREET FLOW 100 YR (WALK GRADE = 0.70')



$n = 0.0221$ (see previous sheet)

$A = 2(\tfrac{1}{2} \times 15 \times 0.7) + (34 \times 0.75) + 2(\tfrac{1}{2} \times 17 \times 0.5)$

$= 44.5$ SF

$p = 65.1$

$R = A/p = 44.5/65.1 = 0.683564$

$R^{2/3} = 0.775984$

$Q_{max} = \frac{1.486}{0.0221} \times 44.5 \times 0.775984 \times s^{1/2}$

$Q_{max} = 2{,}321.9\ s^{1/2}$

131.3

DRAINAGE PLAN 6/12/92

SOCORA VILLAGE

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104 S. BROADWAY
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