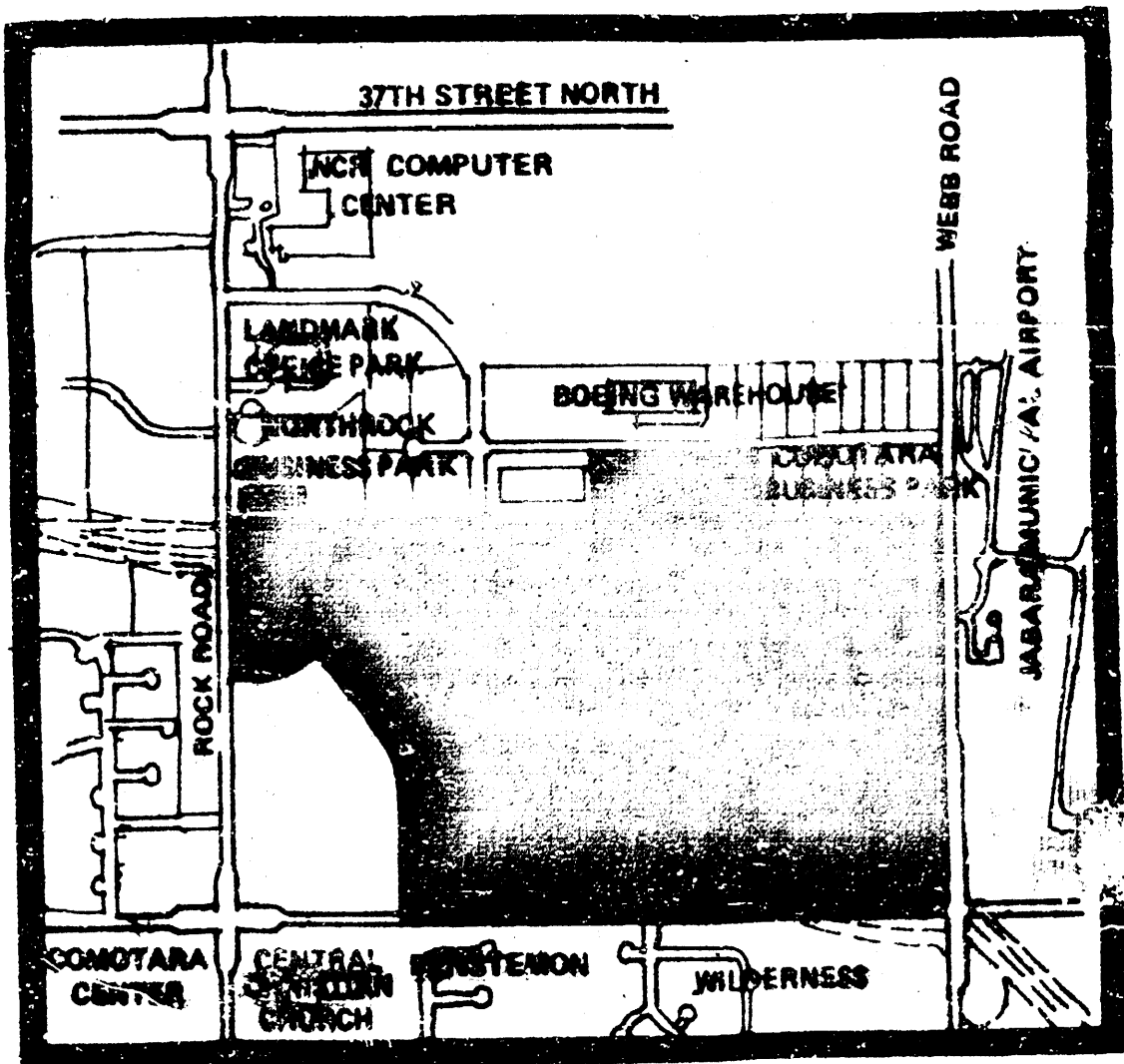
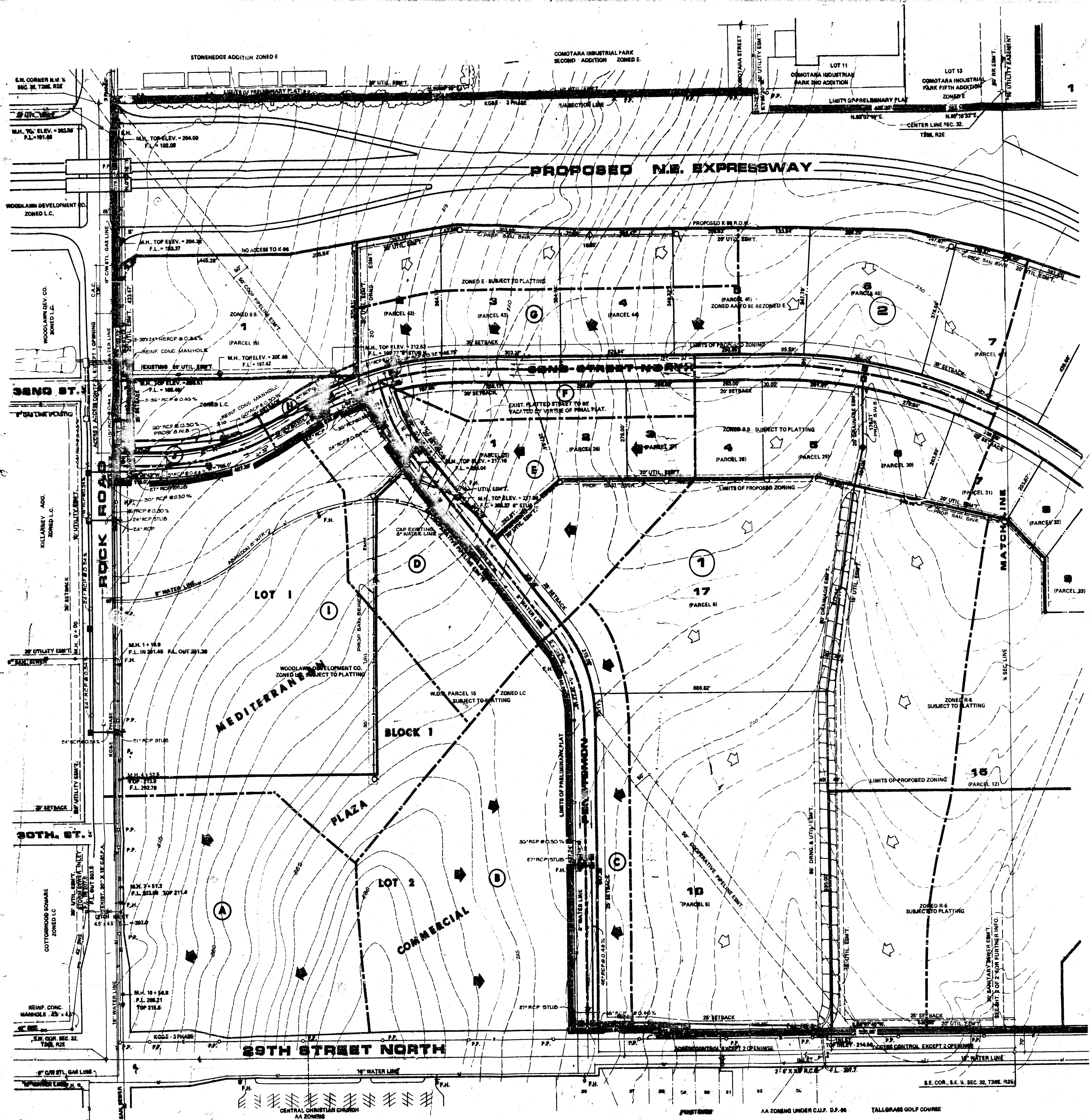
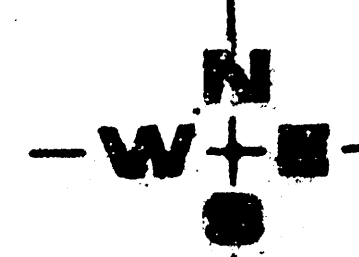




NO SCALE
AREA MAP
 FOR SHEETS 1 AND 2

BENCH MARK: CITY STANDARD, 44' S. & 44' W. OF
 CENTERLINE OF ROCK ROAD AND 29TH ST. NORTH. ELEV. 213.30



51	0	21	19	0.00	0.00	0.00	0.00
52	22	23	26.53	0.11	0.59	0.12	0.00
53	0	23	9.64	0.00	0.24	0.00	0.00
54	23	27	73.13	0.31	0.79	0.00	0.00
55	0	24	-5.36	0.00	0.21	0.00	0.00
56	24	25	7.33	0.42	0.23	0.00	0.00
57	0	26	10.44	0.01	0.83	0.00	0.00
58	26	25	19.44	0.23	0.41	0.00	0.00
59	0	25	-2.72	0.00	0.86	0.36	0.00
60	25	37	15.35	0.18	0.23	0.00	0.00
61	0	27	-4.37	0.00	0.15	0.00	0.00
62	27	28	34.11	0.43	1.04	0.00	0.00
63	0	28	-1.52	0.00	0.01	0.00	0.00
64	28	29	41.29	0.48	0.79	0.00	0.00
65	28	29	114.35	0.95	0.75	0.00	0.00
66	29	30	114.35	0.95	1.22	0.00	0.00
67	30	0	113.13	0.00	1.16	0.00	0.00
68	29	30	44.59	0.00	0.04	0.00	0.00
69	0	30	0.00	0.00	0.02	0.00	0.00
70	0	31	5.33	0.00	0.07	0.00	0.00
71	33	40	56.33	0.65	0.00	0.00	0.00
72	34	33	96.33	0.19	0.00	0.00	0.00
73	0	34	-3.79	0.00	0.96	0.00	0.00
74	0	35	12.21	0.01	0.69	0.00	0.00
75	35	34	12.21	1.73	0.69	0.00	0.00
76	36	34	47.91	1.46	1.07	0.00	0.00
77	0	35	18.62	0.06	1.20	0.00	0.00
78	37	36	29.29	1.17	1.26	0.00	0.00
79	0	37	15.58	0.01	0.57	0.00	0.00
80	38	37	13.79	0.78	0.25	0.00	0.00
81	0	38	9.29	0.01	0.35	0.00	0.00
82	38	38	4.49	0.12	0.15	0.00	0.00
83	0	39	4.45	0.00	0.06	0.00	0.00
84	40	32	56.33	0.26	0.00	0.00	0.00
85	0	41	65.03	0.01	0.67	0.00	0.00
86	41	42	12.98	0.42	1.00	0.00	0.00
87	42	24	12.98	0.21	1.24	0.00	0.00

A	10.05		0.78	0.88	16	4.43	7.18	34.72	63.50		
B	11.82		0.78	0.88	16	4.43	7.18	40.84	74.68		
C	3.64		0.78	0.88	16	4.43	7.18	12.58	23.00		
B & C		15.46	0.70	0.88	18	4.20	6.84	50.64	93.06	48" RCP	0.40%
D	5.55		0.78	0.88	15	4.56	7.37	15.74	35.99		
E	7.37		0.78	0.88	16	4.43	7.18	25.46	46.56		
D & E		12.92	0.78	0.88	17	4.31	7.00	43.43	79.59		
F	2.65		0.78	0.88	15	4.56	7.37	9.42	17.18		
G	7.05		0.78	0.88	15	4.56	7.37	27.64	50.39		
F & G		9.70	0.78	0.88	15	4.56	7.37	37.06	67.58	30" RCP	0.84%
H	0.50		0.88	0.93	15	4.56	7.37	2.01	3.43		
D thru H		23.12		0.88	18	4.20	6.84	75.74	139.17	54" RCP	0.52%
I	8.97		0.78	0.88	18	4.20	6.84	29.38	53.99		
J	0.72		0.88	0.93	15	4.56	7.37	2.89	4.94		
I & J		9.69	0.78	0.88	18	4.20	6.84	31.74	58.32	42" RCP	0.34%
D thru J		32.81	0.78	0.88	22	3.81	6.26	97.51	180.74	3'-38" x 24" HERCIP'S	0.54%
K	8.83		0.78	0.88	18	4.20	6.84	29.12	53.15		

MEDITERRANEAN PLAZA COMMERCIAL										PIPE SIZE	PIPE SLOPE
	AREA ACRES	AREA ACCU.	C ₅	C ₁₀₀	T _c	I ₅	I ₁₀₀	Q ₅	Q ₁₀₀		
A	10.05		0.78	0.88	16	4.43	7.18	34.72	63.50		
B	11.82		0.78	0.88	16	4.43	7.18	40.84	74.68		
C	3.64		0.78	0.88	16	4.43	7.18	12.58	23.00		
B & C		15.46	0.78	0.88	18	4.20	6.84	50.64	93.06	48" RCP	0.40%
D	6.95		0.78	0.88	15	4.56	7.37	24.72	45.07		
E	7.37		0.78	0.88	16	4.43	7.18	25.46	46.56		
D & E		14.32	0.78	0.88	17	4.31	7.00	48.14	88.21		
F	2.65		0.78	0.88	15	4.56	7.37	9.42	17.18		
G	7.05		0.78	0.88	15	4.56	7.37	27.64	50.39		
F & G		9.70	0.78	0.88	15	4.56	7.37	37.06	67.58	30" RCP	0.84%
H	0.50		0.88	0.93	15	4.56	7.37	2.01	3.43		
D thru H		24.52	0.88	0.88	18	4.20	6.84	80.33	147.59	60" RCP	0.34%
I	8.97		0.78	0.88	18	4.20	6.84	62.80	115.39		
J	0.72		0.88	0.93	15	4.56	7.37	2.89	4.94		
I & J		19.89	0.78	0.88	18	4.20	6.84	65.16	119.72		
D thru J		44.41	0.78	0.88	22	3.81	6.26	138.56	255.20	4-38" x 24"	0.54%

JUNCTION (NO)	ELEVATION (FT)	DEMAND	PRESSURE (PSI)	HYDRAULIC LOSS (F)
1	210.0	0.0	1.6	215.3
2	209.5	0.0	1.7	215.5
3	209.0	0.0	1.8	215.9
4	208.0	0.0	2.5	213.7
5	206.3	0.0	2.6	212.2
6	206.5	0.0	2.7	212.4
7	204.7	0.0	3.8	211.3
8	204.5	0.0	3.9	211.1
9	203.7	0.0	4.0	210.9
10	204.4	0.0	4.0	211.0
11	204.2	0.0	4.0	210.9
12	202.2	0.0	4.8	210.5
13	201.3	0.0	5.8	209.7
14	203.0	0.0	5.5	209.7
15	203.0	0.0	5.5	209.7
16	199.5	0.0	3.3	205.0
17	206.3	0.0	3.6	212.2
18	206.0	0.0	3.6	212.0
19	205.0	0.0	2.4	210.5
20	203.5	0.0	2.4	210.2
21	202.7	0.0	2.2	210.2
22	201.4	0.0	2.7	209.7
23	200.0	0.0	2.7	209.2
24	200.5	0.0	2.7	209.2
25	201.3	0.0	2.9	209.5
26	201.3	0.0	2.9	209.5
27	199.4	0.0	2.1	208.7
28	199.9	0.0	2.1	208.7
29	196.2	0.0	2.1	203.4
30	196.0	0.0	2.1	203.4
31	199.9	0.0	2.1	208.7
32	201.3	0.0	2.1	209.5
33	205.7	0.0	2.1	209.5
34	206.4	0.0	2.1	211.1
35	205.9	0.0	2.1	211.4
36	210.1	0.0	0.0	216.0
37	211.4	0.0	2.4	217.0
38	212.5	0.0	2.4	217.9
39	213.7	0.0	1.7	219.1
40	232.0	0.0	2.3	229.5
41	206.8	0.0	2.9	210.9
42	206.8	0.0	2.9	210.9

THE NET SYSTEM DEMAND = 0	
SUMMARY OF INFLOWS(+) AND OUTFLOWS(-)	
PIPE NO.	FLOW
1	11.52
3	4.52
5	5.93
9	5.97
11	6.22
12	13.52
15	15.04
18	11.54
20	16.96
22	-1.18
23	2.26
34	5.13
39	9.06
40	12.04
42	3.58
44	-41
46	0
51	7.1
53	-5.64
55	-2.26
57	19.43
59	-2.72
61	-4.37
63	-1.52
66	-114.95
67	-13.14
69	0
70	3.53
73	-9.79
74	12.1
77	15.62
78	15.15
81	9.29
83	4.49
85	12.98

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CALCULATIONS & SKETCHES

Station: Med. Laradogan Plaza Commercial
 Reference: Internal Storm Sewer System

Proj. No. P81 Date 4/16/22
 Drawn By _____ Date _____
 Check By _____ Date _____
 Sheet 1 Of _____

South - South East Inlet: Area = $0.40 \times 0.9 = 0.36$ acres
 $T = 15$ min, $S_0 = 4.56''/hr$, $T_{100} = 7.37''/hr$, $C_F = 0.81$, $C_{100} = 0.88$
 $Q_p = 2.77$ cfs, $Q_{100} = 4.04$ cfs
 For Q_p , P.P.s Size = $15'' RCP @ 2.41\%$, $18'' RCP @ 2.32\%$
 Inlet opening area req'd @ $h = 0.5'$, Eff. Factor = 0.8
 $A = \frac{Q_p}{2.48 \times 6.75} = 0.271$ sq. ft. = 10.22 sq. in. $\left[\frac{1.25' \times 24'' \text{ Inlet}}{\text{Inlet Area } 24.00' \times 12.00' = 288$
 For Q_{100} , P.P.s Size = $15'' RCP @ 2.44\%$, $18'' RCP @ 0.37\%$
 Inlet opening area req'd @ $h = 0.5'$, Eff. Factor = 0.8
 $A = 1.5$ sq. ft. = 216.0 sq. in. $\left[\frac{1.25' \times 18'' \text{ Inlet}}{\text{Inlet Area } 24.00' \times 9.00' = 216$

East - South East Inlet: Area = $3.97 \times 0.66 = 2.62$ acres, $T = 15$ min
 $C_F = 0.88$, $C_{100} = 0.95$, $S_0 = 5.56''/hr$, $T_{100} = 7.37''/hr$,
 $Q_p = 6.50 - 2.37 = 4.13$ cfs, $Q_{100} = 4.17 - 2.04 = 2.13$ cfs
 For Q_p , P.P.s Size = $18'' RCP @ 2.12\%$, $21'' RCP @ 2.32\%$
 Inlet opening area = 0.12 sq. ft. = 3.14 sq. in. $\left[\frac{1.25' \times 24'' \text{ Inlet}}{\text{Inlet Area } 24.00' \times 12.00' = 288$
 For Q_{100} , P.P.s Size = $24'' RCP @ 0.66\%$, $27'' RCP @ 0.27\%$
 Inlet opening area @ $h = 0.5'$, Eff. Factor = 0.8 $\Rightarrow 6.2$ sq. ft. = 864 sq. in.
 For 2 sq. in. $\left[\frac{1.25' \times 18'' \text{ Inlet}}{\text{Inlet Area } 24.00' \times 9.00' = 216$

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CALCULATIONS & SKETCHES

Location: Med. Hengerson Plaza Commercial
Reference: Internal Storm Sewer System

Drawn By: FDW
Checked By: _____
Date: 2/16/87
Sheet: 2 of _____

East North East Inlet: Area = $0.75 + 0.59 = 1.32 \text{ acres}$
 $T_c = 15' + \frac{310}{14.4} = 16 \text{ min}$, $V_s = 4.93' \text{ hr}$, $L_w = 7.15' \text{ hr}$, $C_c = 0.88$
 $C_{wa} = 0.32$, $Q_s = 5.15 + \left(\frac{4.93}{0.32} \right) (8.1) = 13.24 \text{ cfs}$, $Q_{wa} = 2.82 \text{ cfs}$
 $\left(\frac{1.32}{0.32} \right) (5.21) = 12.370 \text{ cfs}$

For Q_s , Pipe Size = 21" RCP @ 0.75%, 24" RCP @ 0.57%
Inlet opening area @ $A = 0.5' \text{ ft}$ Factor = $0.8 \Rightarrow 1.95 \text{ sq ft} =$
280.8 sq in. $\left[\begin{array}{l} 24" \times 48" \text{ Drop Inlet} \\ Factor = 1.26 \Rightarrow 368 \text{ sq in.} \end{array} \right]$

For Q_{wa} , Pipe Size = 27" RCP @ 0.62%, 30" RCP @ 0.59%
Inlet opening area @ $A = 0.5' \text{ ft}$ Factor = $0.8 \Rightarrow 3.31 \text{ sq ft} =$
475.2 sq in. $\left[\begin{array}{l} \text{Special Drop Inlet} \\ Factor = 1.26 \Rightarrow 746 \text{ sq in.} \end{array} \right]$

North North East Inlet: Area = $0.62 + 0.49 + 0.47 = 1.58 \text{ acres}$
 $T_c = 16' + \frac{310}{14.4} = 16.4 \text{ min} = 16 \text{ min}$, $C_s = 0.23$, $C_{wa} = 0.35$, $L_w = 4.93' \text{ hr}$
 $V_s = 7.15' \text{ hr}$, $Q_s = 10.25 + 13.84 = 24.09 \text{ cfs}$
 $Q_{wa} = 17.56 + 23.70 = 41.26 \text{ cfs}$

For Q_s , Pipe Size = 27" RCP @ 0.59%, 30" RCP @ 0.57%
Inlet opening area @ $A = 0.5' \text{ ft}$ Factor = $0.8 \Rightarrow 3.7 \text{ sq ft} =$
523.2 sq in. $\left[\begin{array}{l} \text{Special Drop Inlet} \\ Factor = 1.26 \Rightarrow 744 \text{ sq in.} \end{array} \right]$

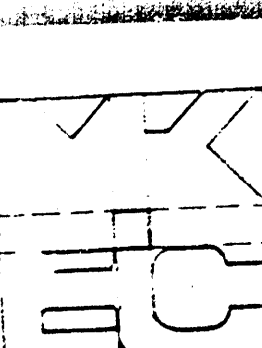
**MID-KANSAS ENGINEERING
CONSULTANTS P.A.**

OFFICE: 107 S.W. 6TH AVE., SUITE 100
TOPEKA, KAN. 66606-1897

CALCULATIONS & SKETCHES

Med Plaza Comm.
Lateral SWS

DRAWN BY: FRN Date: 4/1/97
CHECKED BY: _____ Date: _____
DESIGNED BY: G Date: _____



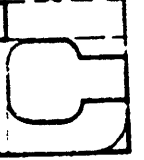
North North East Inlet (Cont.):

For 2nd, Pipe Size = 30" RCP @ 1.05%, 36" RCP @ 0.36%
Inlet Opening Area at h=0.5', 656 sq ft → 64 sq ft =
92.6 sq ft.

South West Inlet: Area = 1.05 * 0.33 = .35 acres, T_c = 15 min
C_s = 0.83, C_{em} = 0.35, I_p = 4.56"/hr, L_w = 7.27"/hr, Q_s = 8.07 cfs
L_w = 3.78 fts

For 2nd, Flow rate = 21" RCP @ 0.76%, 24" RCP @ 0.38%
Inlet Opening Area at 1.05' & 656 sq ft → 0.83 → 5.2 sq ft =
79.9 sq ft.

North West Inlet: Area = 1.05 acres, T_c = 16.4 + $\frac{1.05}{1.48}$ = 17.4 min
C_s = 0.83, C_{em} = 0.35, L_w = 7.27"/hr, Q_s = 12.97 - $(\frac{1.05}{1.48}) \cdot 5.165$ =
10.37 cfs = 65.65 gpm



MID-KANSAS ENGINEERING CONSULTANTS P.A.
200 NORTH 28TH STREET SUITE 200
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CALCULATIONS & SKETCHES

Proj. No.	22N	Date	2/17/83
Proj.		Date	
Client		Date	
Sheet	4	Of	

Location: Med Plaza Canal

Reference: Intersect SWS

North West Inlet (Root): Alternative A: Only Q₅ picked up @ previous inlets. Difference in 2' @ 2' was 1' flow to be picked up @ the North West Inlet.

2' - 2' = 0' p.p.e = 41.25 - 29.00 = 12.17 cfs

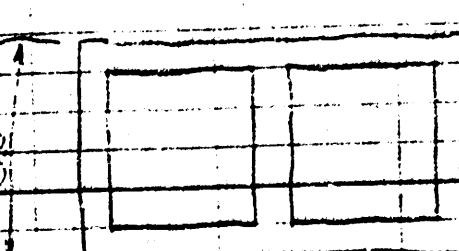
Diff. in Q₅ & Q₂₀ + Q from previous flow to NW Inlet = 17.07 + 12.17 = 29.24 cfs

29.24 cfs

Inlet Opening Area @ 0.5' Eff Factor = 2.0 ⇒ 10.9 sq ft = 59.6 sq in

Spec'd 1' Deep Inlet = 21.25 = 2(15.7) = 19.14

Spec'd 1' Deep Inlet = 19.14 in



H₂ = 211.5 - 205.16 + 14.75 = 21.09

= 7.925' = 8'

(11.75 + 0.5 + 5.5) + (8 + 7.5 + 2)

(0.5 + 5.5) (7.5) = 10.85 = 11'

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CALCULATIONS & SKETCHES

Location Med. Plaza Conv.
Reference Intercom. SW5

Plan No. <u>EN</u>	Date <u>6/27/77</u>
By _____	Date _____
Drawn <u>S</u>	Chk _____

North point Inter: Area = 0.93 acres, $T_c = 15 \text{ min.}$

$C_s = 0.88$, $C_{adj} = 0.93$, $f_p = 4.56 \text{ "/math>$

$Q_s = 3.75 \text{ cfs}$, $Q_w = 6.37 \text{ cfs}$ 18' RCP @ 2.36%

$I_{in} = \text{spec. area @ } b = 0.5' \text{, } 42" \text{ factor} = 0.3 \Rightarrow 2.4 \text{ sq ft} =$

3456 sq. in.

$24" \times 48" \text{ Drain } = 1.147$
 $\hookrightarrow \text{Drain } 24 \text{ cfs} \Rightarrow 362 \text{ sq. in.}$

