

MEMO

TO: City of Wichita
 Department of Engineering
 City Hall - 455 N. Main
 Wichita, KS 67202

PROJECT NO. 36-84090-177
 PROJECT: Chazy Business Park
 Addition
 DATE: February 29, 1984

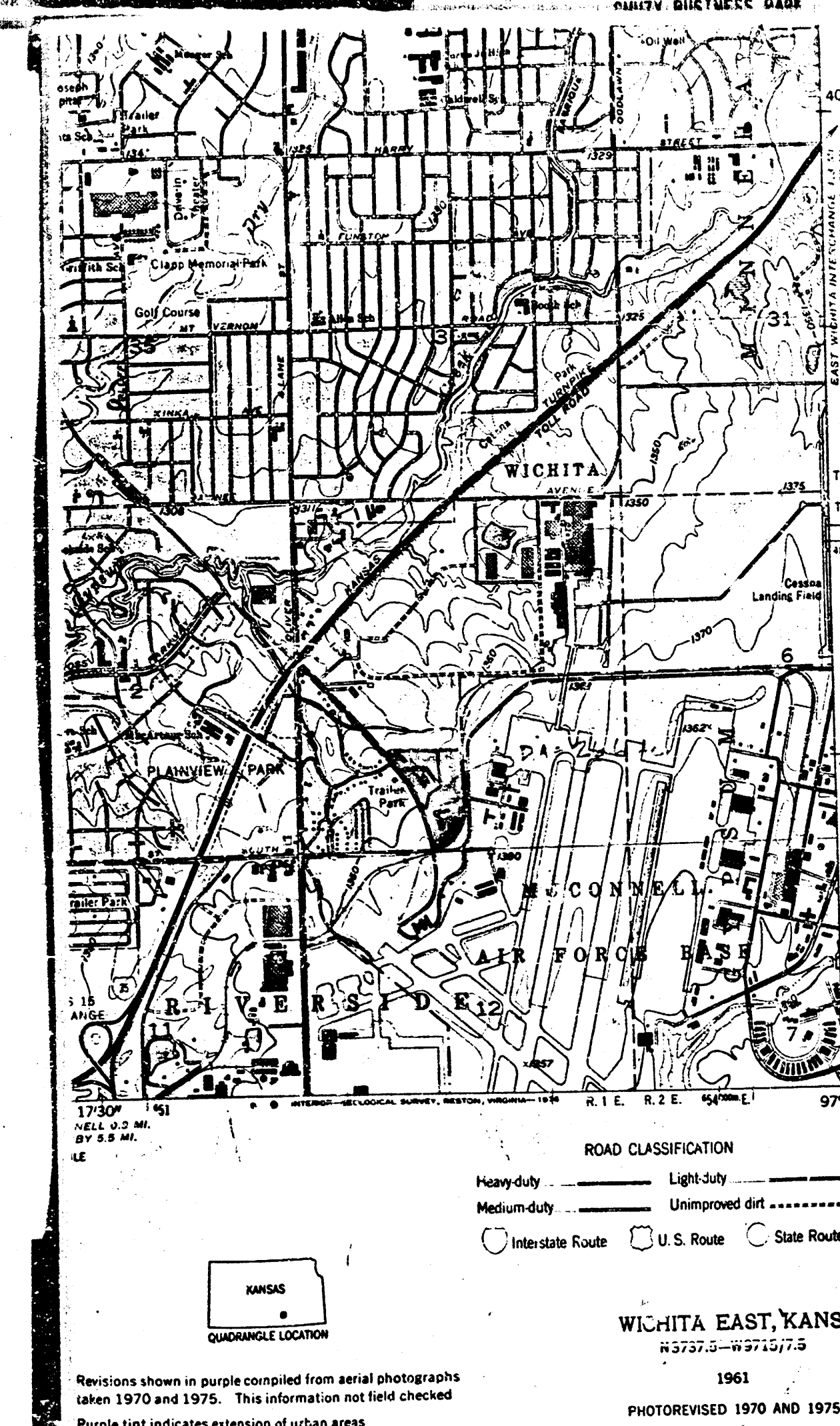
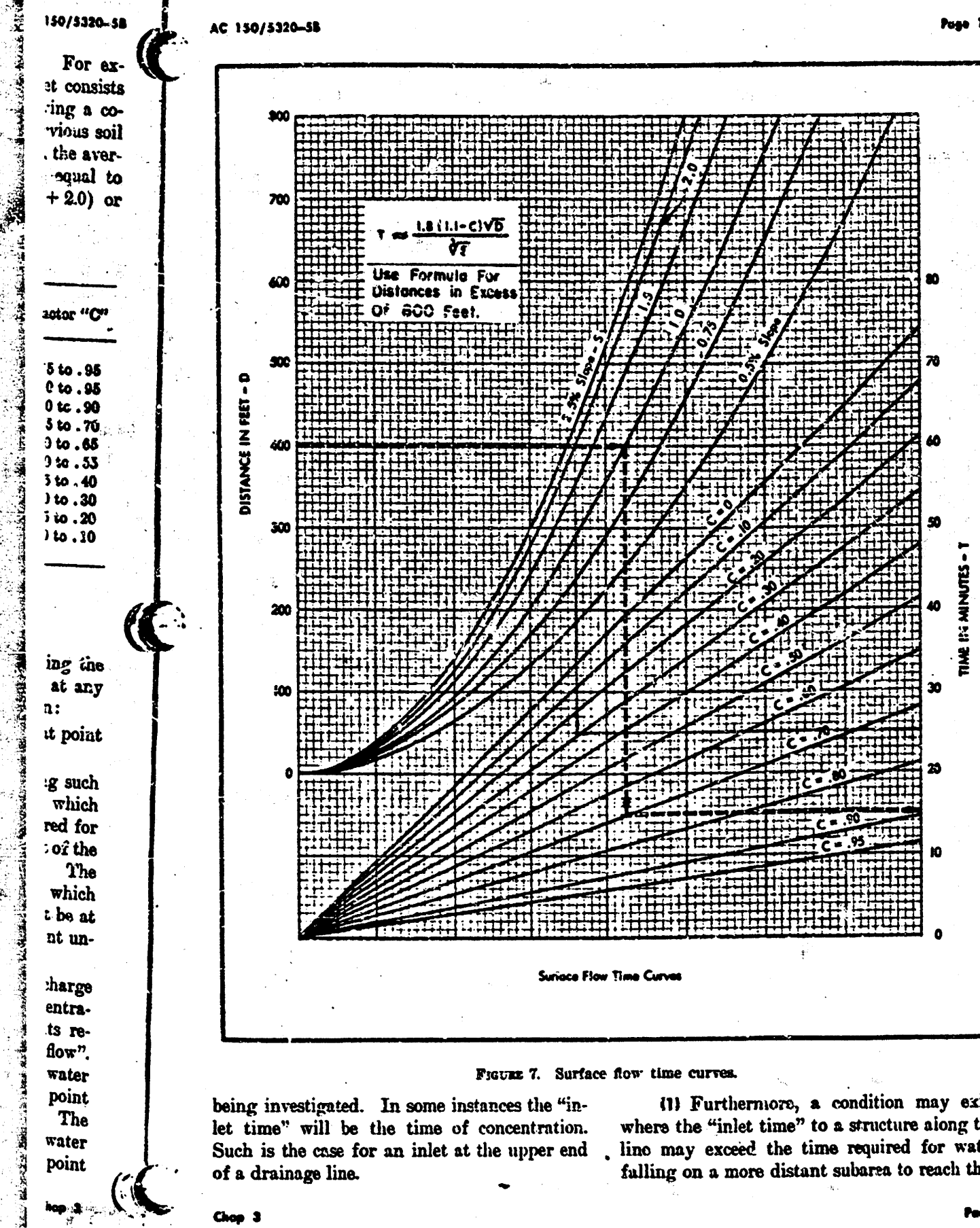
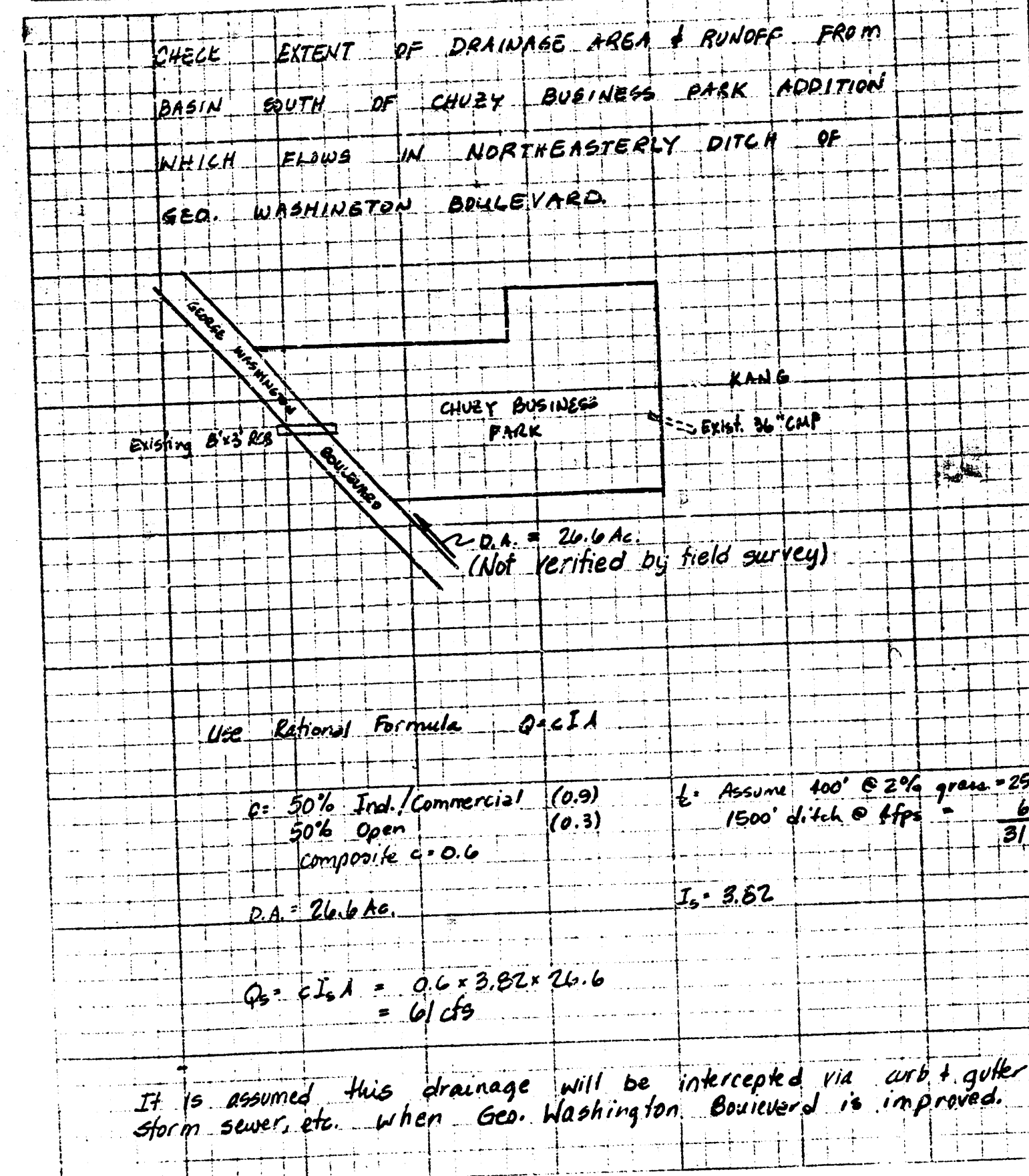
FROM: Charles S. Brown, P.E.
 REFERENCE: File

COPIES TO:
 Carl Chazy
 Louise Oliver, MAPD
 File

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

Transmitted herewith are two copies of the Drainage Plan and supporting calculations for the proposed Chazy Business Park Addition to Wichita. The Preliminary Plat will be submitted to MAPD on March 2, 1984, for hearing by MAPD Subdivision Committee on March 15, 1984. If you have any questions or need any additional information, please advise.

Date Feb 29, 1984 Page 1 of 1
 Project Chazy Business Park
 Item Drainage



Date Feb 27, 1984 Page 1 of 2
 Project Chazy Business Park
 Item Drainage - Alternate No. 2

USE RATIONAL FORMULA FOR RUNOFF CALC.

$Q = CIA$ where $C = 0.9$
 $I = 15$ min. (assumed due to 15 min. storm)

$I_p = 4.06$ $I_a = 5.21$ $I_m = 6.78$ $I_{avg} = 5.36$

Inlet No. 1 $P.A. = 3.1$ ft.
 $Q_1 = 0.9 \times 4.06 \times 9.1 = 33.2$ cfs
 $Q_2 = 0.9 \times 5.21 \times 9.1 = 42.7$ cfs
 $Q_3 = 0.9 \times 6.78 \times 9.1 = 54.8$ cfs
 $Q_{avg} = 0.9 \times 5.36 \times 9.1 = 45.8$ cfs

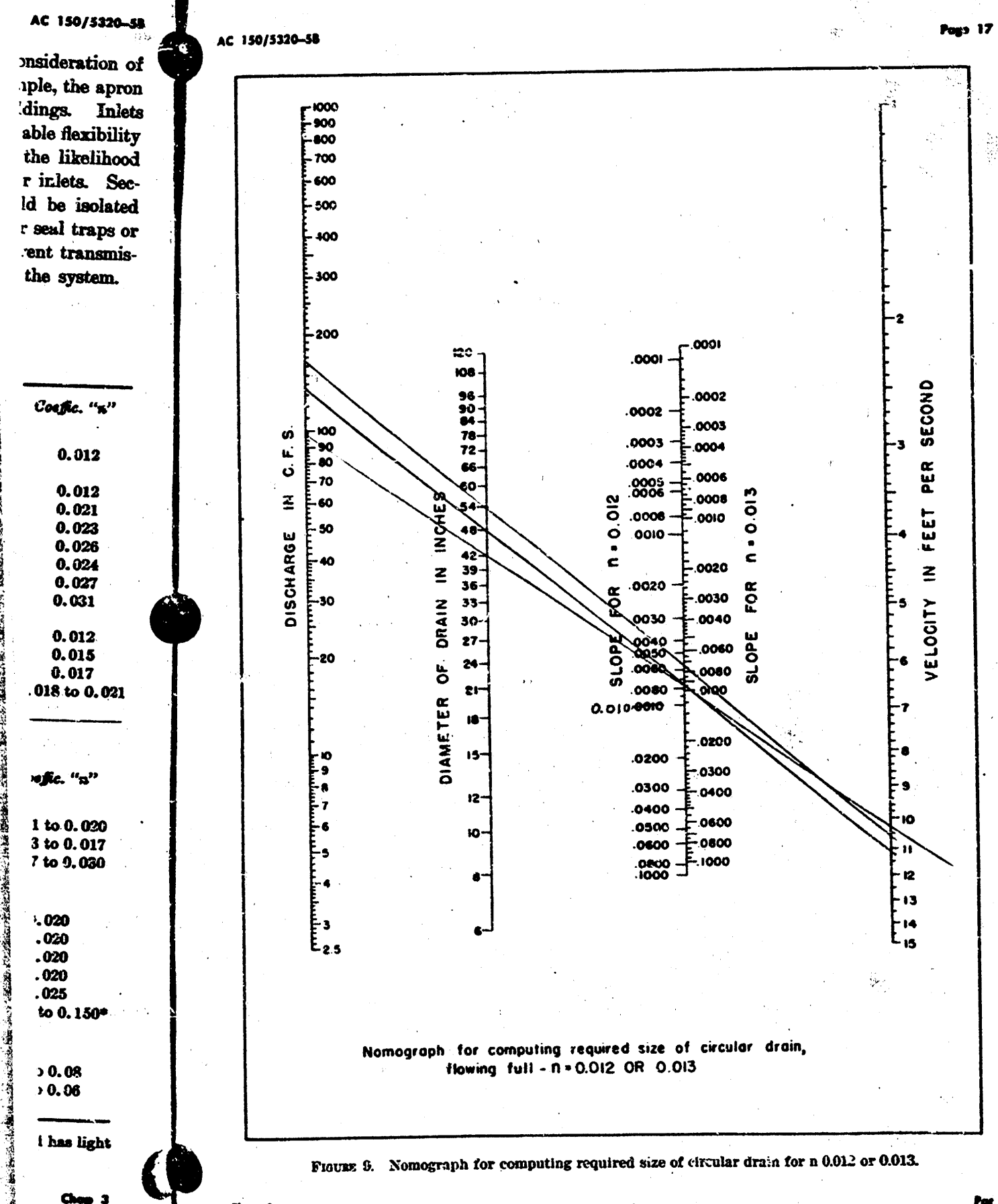
Inlet No. 3 $P.A. = 3.0$ ft.
 $Q_1 = 0.9 \times 4.06 \times 9.1 = 33.2$ cfs
 $Q_2 = 0.9 \times 5.21 \times 9.1 = 42.7$ cfs
 $Q_3 = 0.9 \times 6.78 \times 9.1 = 54.8$ cfs
 $Q_{avg} = 0.9 \times 5.36 \times 9.1 = 45.8$ cfs

Inlet No. 2 $P.A. = 3.2$ ft.
 $Q_1 = 0.9 \times 4.06 \times 9.1 = 33.2$ cfs
 $Q_2 = 0.9 \times 5.21 \times 9.1 = 42.7$ cfs
 $Q_3 = 0.9 \times 6.78 \times 9.1 = 54.8$ cfs
 $Q_{avg} = 0.9 \times 5.36 \times 9.1 = 45.8$ cfs

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 Project Chazy Business Park
 Item Drainage - Alternate No. 2

Inlet No. 1 $P.A. = 6.6$

$Q_1 = 0.9 \times 4.06 \times 6.6 = 24.1$
 $Q_2 = 0.9 \times 5.21 \times 6.6 = 30.9$
 $Q_3 = 0.9 \times 6.78 \times 6.6 = 39.1$
 $Q_{avg} = 0.9 \times 5.36 \times 6.6 = 53.3$



PROFESSIONAL
ENGINEERS
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ASSOCIATION
MEMBERSHIP

100 EAST ENGLISH
WICHITA, KANSAS 67211
(316) 262-2691

HYDROLOGY DATA

PROJECT: Chazy Business Park

ITEM: Storm Sewer Design

RETURN PERIOD: 5 COM

SCHEMATIC DIAGRAM:

SCHEMATIC DIAGRAM:

Diagram showing a sewer line with four manholes (MH) and a catch basin (CB). The flow is from left to right, indicated by an arrow labeled "FLOW DIRECTION".

Manhole 1 (MH 1) is located at station 1+00.0. The flow rate at this manhole is $Q_{p1} = 163.3$ cfs. The distance between MH 1 and MH 2 is 64'.

Manhole 2 (MH 2) is located at station 1+064.0. The flow rate at this manhole is $Q_{p2} = 29.3$ cfs.

Manhole 3 (MH 3) is located at station 1+128.0. The flow rate at this manhole is $Q_{p3} = 135.5$ cfs. The distance between MH 2 and MH 3 is 64'.

Manhole 4 (MH 4) is located at station 1+192.0. The flow rate at this manhole is $Q_{p4} = 96.0$ cfs. The distance between MH 3 and MH 4 is 64'.

The catch basin (CB) is located at station 1+256.0. The flow rate at the catch basin is $Q_{cb} = 46.4$ cfs.

TRIBUTARY AREA						HYDROLOGY DATA			
SUB-BASIN	C	AREA (acres)	SLOPE (%)	LENGTH (feet)	T_{10} (minutes)	t_0 in/hr	Q_0 (cfs)	T_0 (minutes)	t_0 in/hr
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
0	0.67	20.4			22.5	4.45	60.8	22.5	4.45
1	0.9	9.1			15	5.21	42.7	23.3	4.39
2	0.9	9.9			15	5.21	46.4	24.0	4.54
3	0.9	7.2			15	5.21	39.8	24.7	4.39
4	0.9	6.6			15	5.21	30.9	25.4	4.52
			</						

HYDROLOGY DATA SHEET

PROJECT: Chazy Business Park
 ITEM: Storm Sewer Design
 DATE: Feb 27, 1984

COMPUTATIONS BY: CCB REVISIONS BY:

HYDROLOGY SUMMATION				CONDUIT DATA			
Q (cfs)	Q (cfs/ft)	Q (cfs)	Q (cfs/ft)	PIPE (in)	SLOPE (%)	VELOCITY (ft/s)	LENGTH (ft)
22.5	4.45	60.8	22.5	36"	0.9	8.8	410
23.3	4.39	36.0	26.8	36"	0.9	8.8	410
24.0	4.34	38.1	25.5	42"	1.0	10.5	440
24.7	4.29	27.8	28.3	48"	1.0	11.0	430
25.4	4.24	25.0	28.5	54"	0.9	10.5	430

Drainage Area Map

DA No. 1 $P.A. = 2.37$ ft.
 $Q_1 = 0.9 \times 4.06 \times 6.6 = 24.1$
 $Q_2 = 0.9 \times 5.21 \times 6.6 = 30.9$
 $Q_3 = 0.9 \times 6.78 \times 6.6 = 39.1$
 $Q_{avg} = 0.9 \times 5.36 \times 6.6 = 53.3$

DA No. 2 $P.A. = 2.37$ ft.
 $Q_1 = 0.9 \times 4.06 \times 6.6 = 24.1$
 $Q_2 = 0.9 \times 5.21 \times 6.6 = 30.9$
 $Q_3 = 0.9 \times 6.78 \times 6.6 = 39.1$
 $Q_{avg} = 0.9 \times 5.36 \times 6.6 = 53.3$

DA No. 3 $P.A. = 2.37$ ft.
 $Q_1 = 0.9 \times 4.06 \times 6.6 = 24.1$
 $Q_2 = 0.9 \times 5.21 \times 6.6 = 30.9$
 $Q_3 = 0.9 \times 6.78 \times 6.6 = 39.1$
 $Q_{avg} = 0.9 \times 5.36 \times 6.6 = 53.3$

Date 12-15-85 NIP Page 1 of 1
 Project KANG
 Item Culvert at 7100 S.W. Drive

LEON CHASE = 1357.35
 E.L.T. = 51.10
 E.R.T. = 51.50

Plans call for 14.0 sq. ft. CRP, McPherson Curve. Want to know if 60x90" (12.5 sq. ft.) or 68x43" (16.5 sq. ft.) is acceptable.

ROOT STD. ratio for 68x43" when 14.0 sq. ft. is called out.

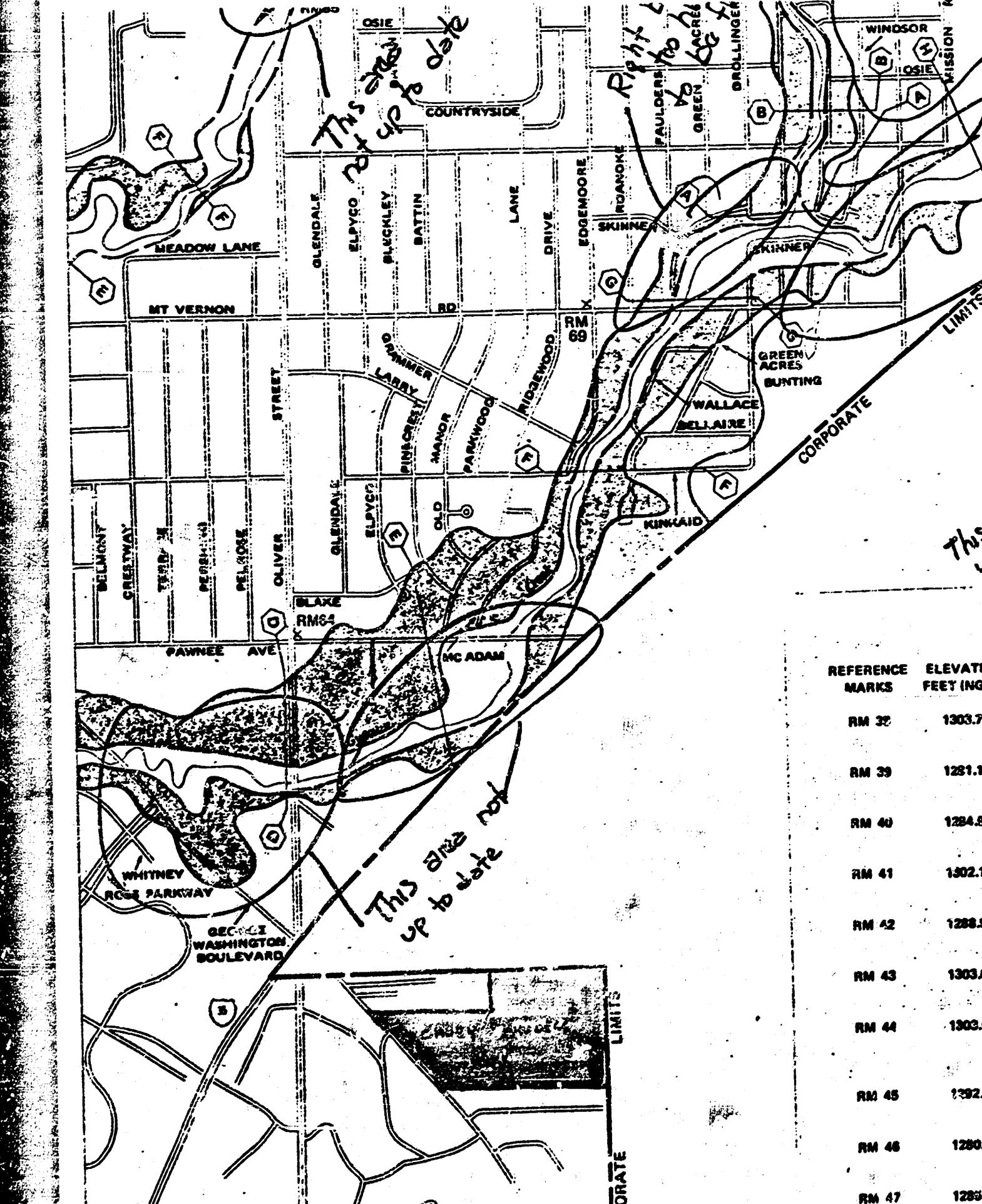
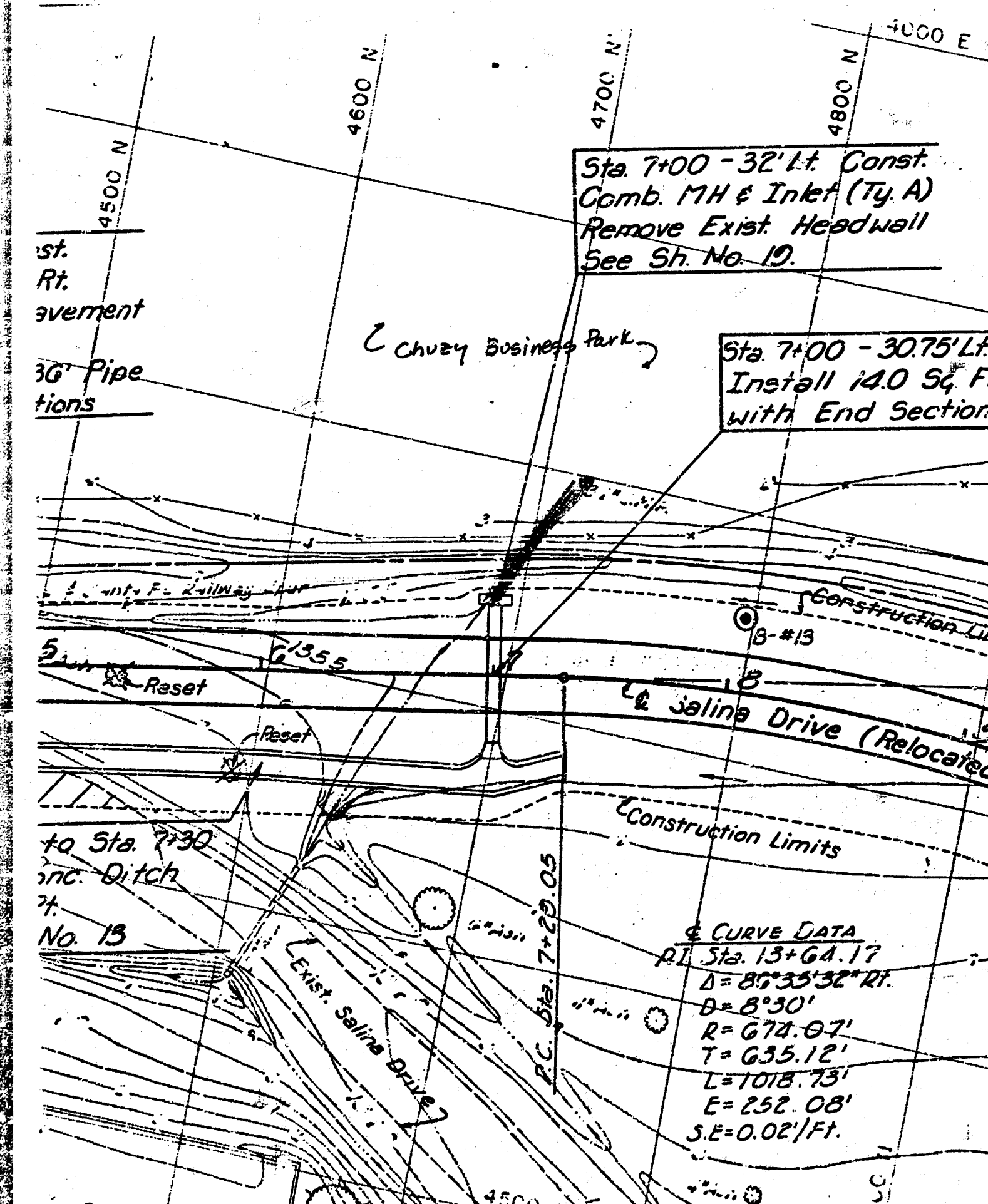
Check hydraulics of system (Assuming inlet control)

$Q_1 = 60$ cfs
 $Q_2 = 105$ cfs

PIPE SIZE MAT'L. Qc elev. Qmax elev.

60x90" (12.5 sq. ft.) RCPHE 54.12 55.26
 60x90" (12.5 sq. ft.) RCPHE 54.12 55.26
 60x90" (12.5 sq. ft.) CMAC 54.12 55.26

Although MH area is less, the 12.5 sq. ft. RCPHE is approximately equivalent to 14.3 sq. ft. CMAC. In inlet control, the 60x90" will fit inside the ditch inlet easier, the 12.5 sq. ft. RCPHE should probably be allowed.



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Check Capacity of Existing Box @ George Washington Blvd.

INLET CONTROL Height of Box (D) = 3'
 Allowable HW elev. = 133.8'
 R. Box = 129.34
 HW = 133.8 - 129.34 = 4.44' say 4.5'
 HW (D) = 4.5/3 = 1.5

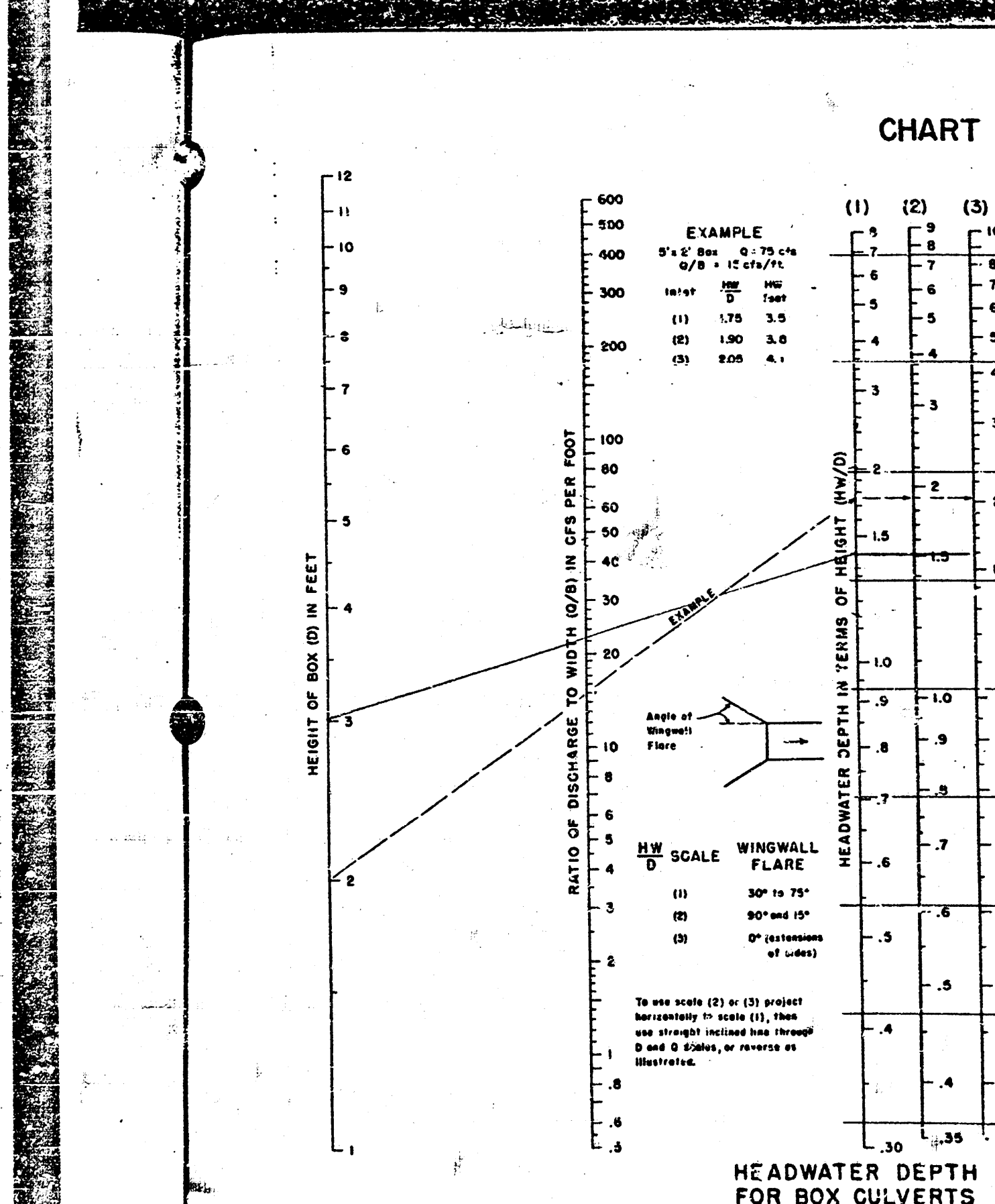
From Chart 1, attached, Q/B = 23 cfs/ft

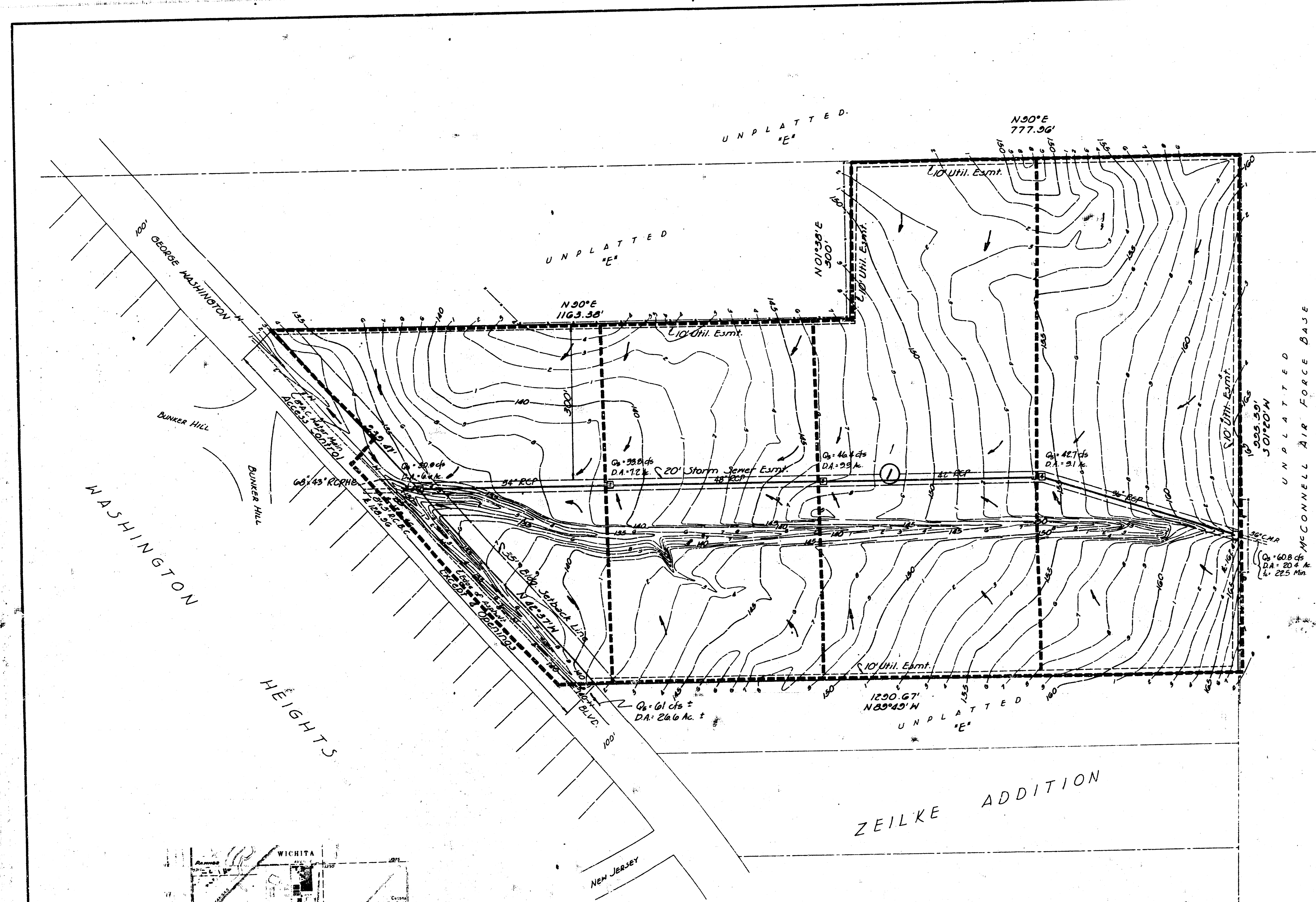
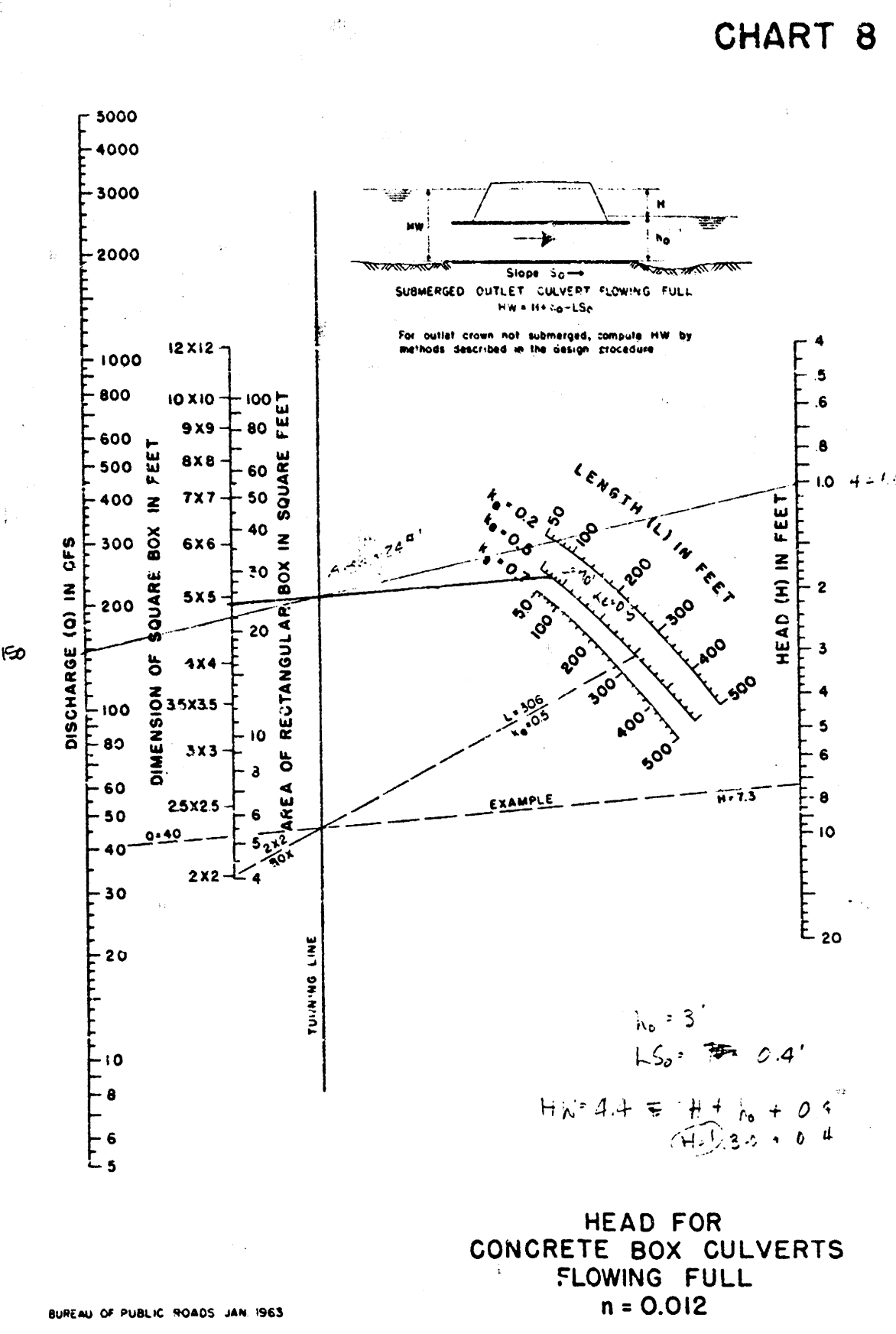
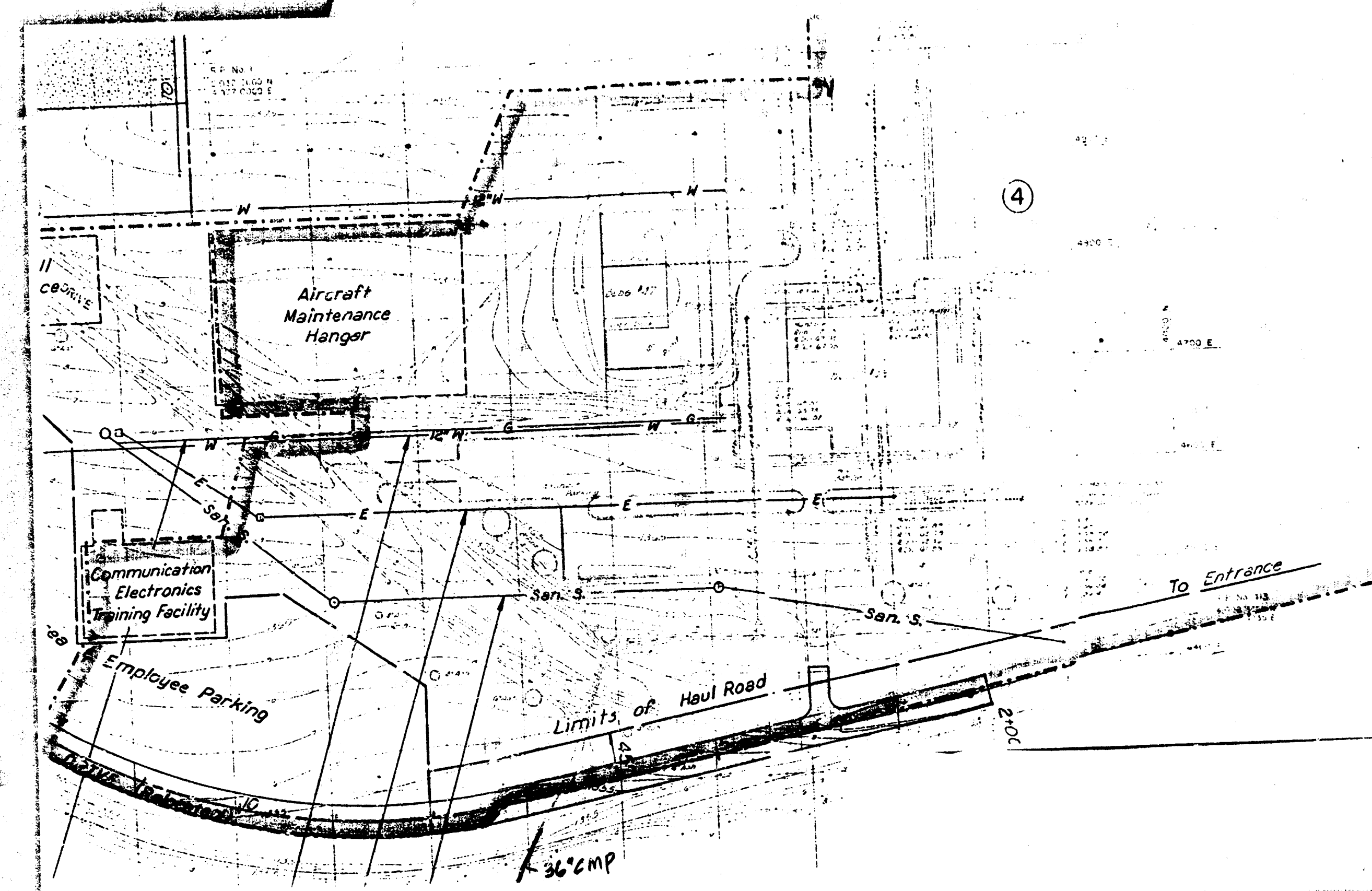
Total capacity = 23 cfs/ft x 5' = 115 cfs

Capacity of Existing Box = 5 yr. storm = 115 cfs

OUTLET CONTROL see attached

$L = 70'$
 $N = 0.012$ (Concrete Box)
 $K = 0.5$ ASSUMED
 $L.S. = 0.4$ (129.36 - 129.74) Elev. drop across box
 $HW = 4.4$ sec. above
 $N = 1.0$ $HW = N + L.S. + h_o$





DRAINAGE PLAN **CHUZY BUSINESS PARK** TRACT IN THE S.W. 1/4 OF SEC. 1, T28S, R1E

Owner: Carl Chuzy
 Engineer: Professional Engineering Consultants, P.A.
 1443 East English
 Wichita, Kansas

- LEGEND**
- Manhole
 - Inlet & No.
 - Storm Water Sewer & Size
 - Drainage Basin Boundary
 - Drainage Direction

NOTE:
 Lot 1, Block 1 shall be graded to drain to the proposed storm sewer via drives, flumes, private storm sewers, and/or other approved drainage facilities

