

BAUGHMAN COMPANY, P.A.
 ENGINEERING & SURVEYING
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LETTER OF TRANSMITTAL

TO Jicky Huang P.E.
CITY ENGRG.
7th floor

DATE <u>9/13/03</u>	JOB NO.
ATTENTION:	
RE:	
<u>file.</u>	

WE ARE SENDING YOU Attached Under separate cover via _____ the following items

Plans Prints Shop drawings Samples Copy of letter
 Specifications Change order Computer disk _____

COPIES	DATE	NO.	
<u>1</u>	<u>9/13/03</u>		<u>FINAL DRAINAGE PLAN</u> <u>REVISED LAKE RIDGE 2ND ADDN.</u>

THESE ARE TRANSMITTED as checked below:

For approval Approved as submitted For review and comment
 For your use & information Approved as noted FOR BIDS DUE _____ 19____
 As requested Return for corrections _____

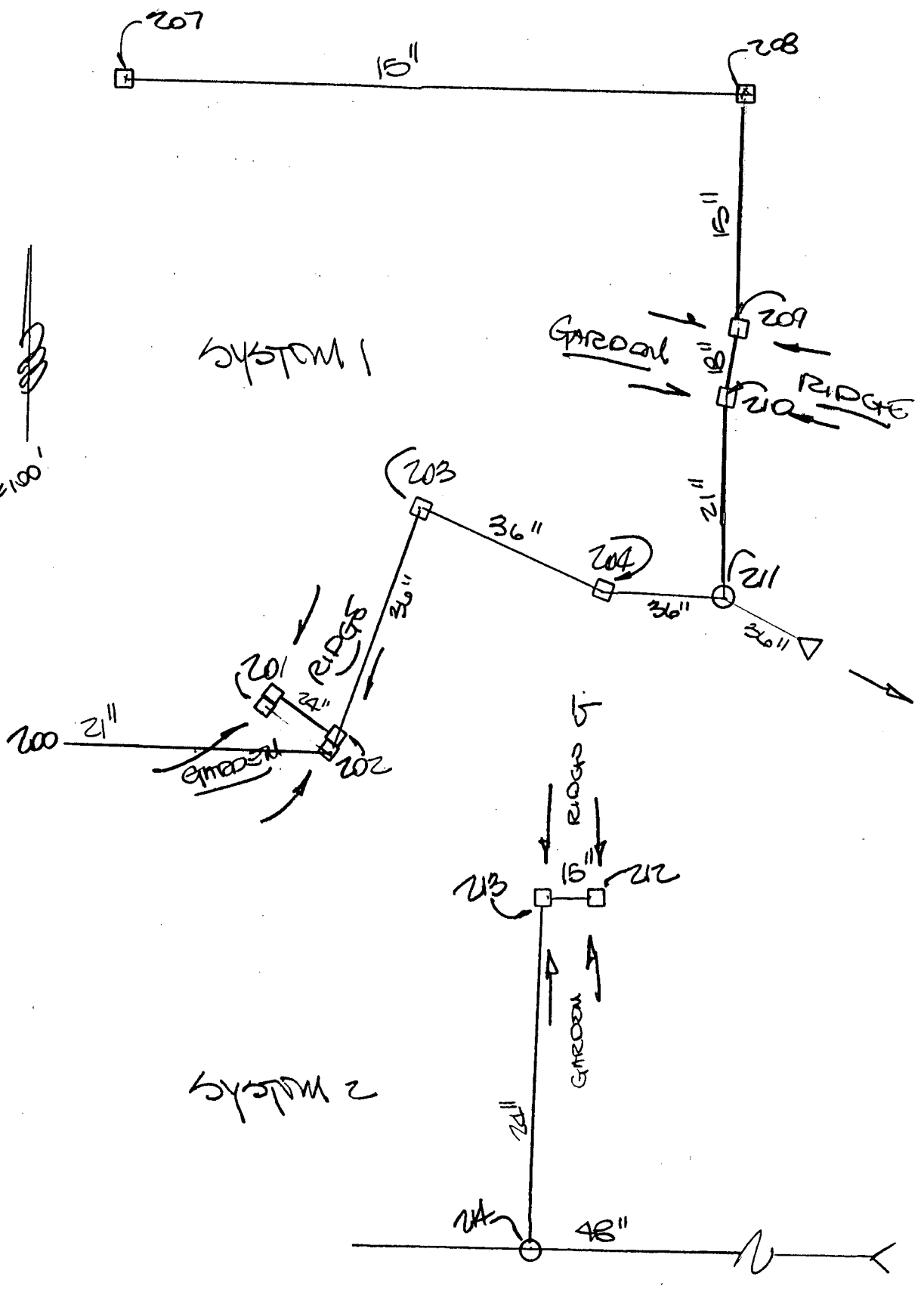
REMARKS: ONLY THE WEST SIDE IS REVISED.
REFER TO OLD PLAN FOR EAST SIDE WHICH
REMAINED THE SAME.

COPY TO _____

SIGNED: [Signature]

STORM WATER SYSTEM -

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS



SYSTEM 1

SYSTEM 2

21st St. - No.

flo calculations —

AREA	SIZE AC.	C	Q ₂	Q ₅	Q ₁₀₀
A	4.1	0.8	—	15	24
B	0.7	0.5	1.3	—	2.6
C	0.5	0.5	1.0	—	1.8
D	1.8	0.3	2.1	—	4.0
E	1.0	0.5	1.9	—	3.7
F	0.9	0.5	1.7	—	3.3
G	0.8	0.5	1.5	—	2.9
H	0.8	0.5	1.5	—	2.9
I	0.4	0.4	0.6	—	1.2
J	7.5	0.5	14.0	—	27.6



PIPE ROUTING CALCULATIONS -

NODE	EXIST'G Q.	CFS AREA IN	CFS TOTAL Q.	PIPE	S.	DEPTH.
200	13.0 cfs	0	13.0			EXIST'G
201	21.6	E. 3.7	31.3	24"	1.20%	100 YR.
202	31.3 cfs	F. 3.3	34.6	36"	0.24%	100 YR.
203	34.6 cfs	0	34.6	36"	0.24%	100 YR.
204	34.6	I 1.2	35.8	36"	0.29%	100 YR.
207	0	D 4.0	4.0	15"	0.40%	100
208	4.0	1.0	5.0	15"	0.50%	-
209	5.0	G. 2.9	7.9	18"	0.56%	100
210	7.9	2.9	10.8	21"	0.47%	100
211	204 + 210 46.6	0	46.6	36"	0.49%	-
212	0	B 2.6	2.6	15"	0.40%	100
213	2.6	A 2.4	4.6	24"	1.38%	100

214

Refer to P&C 48" ROUTING - 1/28/93 Report.

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS



Drainage Plan for Lakeridge 2nd Addition.

* From Lake Ridge Addn. Drainage Plan (4/22/92)
Type C Soil Group

For Lot Drainage to Streets →

$C_2 = 0.48$
$C_{100} = 0.68$

For Back Lot Drainage →

$C_2 = 0.24$
$C_{100} = 0.51$

Use $T_c = 15$ min. for All areas.

$$i_2 = 3.83 \text{ "/hr.}$$

$$i_{100} = 7.37 \text{ "/hr.}$$

Street Capacity for 34' Fc-Fc Pvmnt, $s = 0.35\%$

$Q_{max} 2 \text{ year} = 27.2 \text{ cfs}$ (From Lake Ridge Drain Plan)
4/22/92

Street Capacity

Area A: $D_A = 3.00$ Acres (Lots to Street)
 $i_2 = 3.83$ $C_2 = 0.48$
 $i_{100} = 7.37$ $C_{100} = 0.68$

$Q_2 = (3.00)(3.83)(0.48) = 5.5 \text{ cfs}$
$Q_{100} = (3.00)(7.37)(0.68) = 15.0 \text{ cfs}$

L2keridge 2nd Addn.

By CB

Date 9/18/92

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BAUGHMAN COMPANY, P.A.

Area B: DA = 3.54 Ac (Lots to Street)

$$Q_2 = (3.54)(3.83)(0.48) = 6.5 \text{ cfs}$$

$$Q_{100} = (3.54)(7.37)(0.68) = 17.7 \text{ cfs}$$

Area C: DA = 2.55 Ac (Lots to Street)

$$Q_2 = (2.55)(3.83)(0.48) = 4.7 \text{ cfs}$$

$$Q_{100} = (2.55)(7.37)(0.68) = 12.8 \text{ cfs}$$

Area E: DA = 1.21 Ac (Back lot)

$$Q_2 = (1.21)(3.83)(0.24) = 1.1 \text{ cfs}$$

$$Q_{100} = (1.21)(7.37)(0.51) = 4.5 \text{ cfs}$$

Area F: DA = 0.63 Ac (Back lot)

$$Q_2 = (0.63)(3.83)(0.24) = 0.6 \text{ cfs}$$

$$Q_{100} = (0.63)(7.37)(0.51) = 2.4 \text{ cfs}$$

Storm Water Sewers All Drain to Proposed Pond
To the West of the Plat.

Pond Plan currently under review by FEMA
2nd D.W. 2. (State of Kansas).

Area D: DA = 1.75 Ac (Lots to Street)

$$Q_2 = (1.75)(3.83)(0.48) = 3.2 \text{ cfs}$$

$$Q_{100} = (1.75)(7.37)(0.68) = 8.8 \text{ cfs}$$



Basin A Sump: size for 100 yr. storm.

$Q_{100} = 15.0 \text{ cfs} < 27.2 \text{ cfs}$ (2 yr. st. cap \rightarrow o.k.)

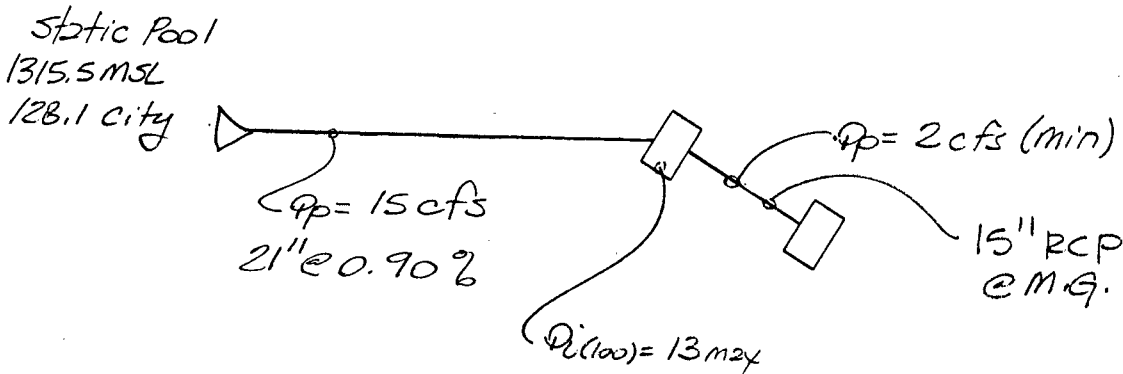
1A Inlets in Sump: Single Inlet ($L = 5'$)

@ T.C. Elev., Head = $0.55' + 4'' = 0.88'$

$C_{2p} = 6.2 \text{ cfs}$ (2 yr)

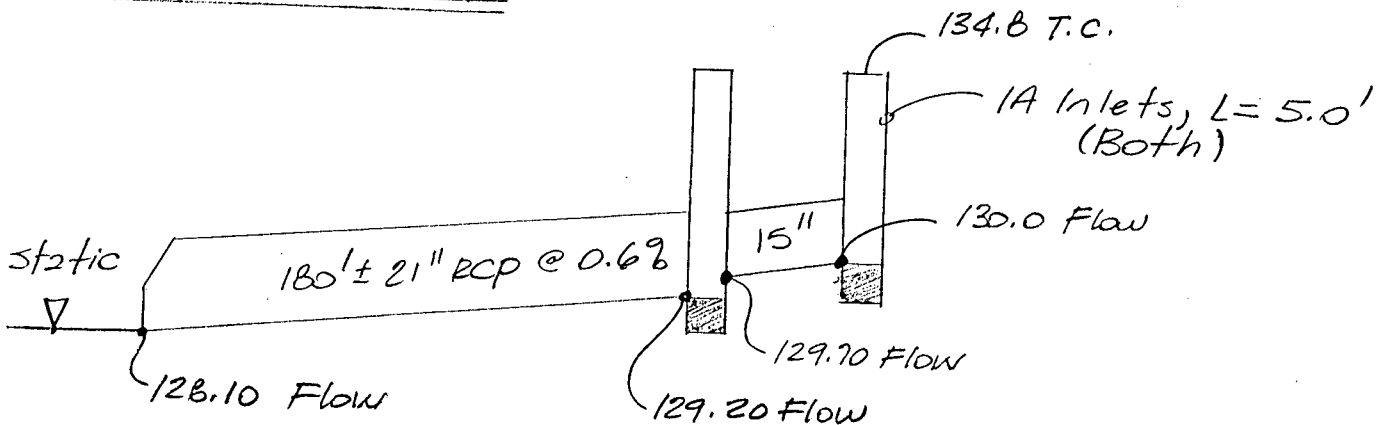
Since $Q_{100} = 15 \text{ cfs}$ and $Q_{12} = 6.2$ ($L = 5'$)

Use 2 1A Inlets ($L = 5'$)



Pipe Sizes from "Design Data 4" Conc. Pipe Assoc.

BASIN A Sump.



$HGL = 134.8 - 0.55' - 0.5' = 133.75$
 Crit. Depth of Pipe = T.P. = $128.10 + 21'' = 129.85$
 $HGI = 133.75 - 129.85$



Basin B Sump : size for 100 yr. storm

2 yr street cap. > $Q_{100} = 17.7 \text{ cfs}$ o.k.

Use 2 IA Inlets (L=5') As Before

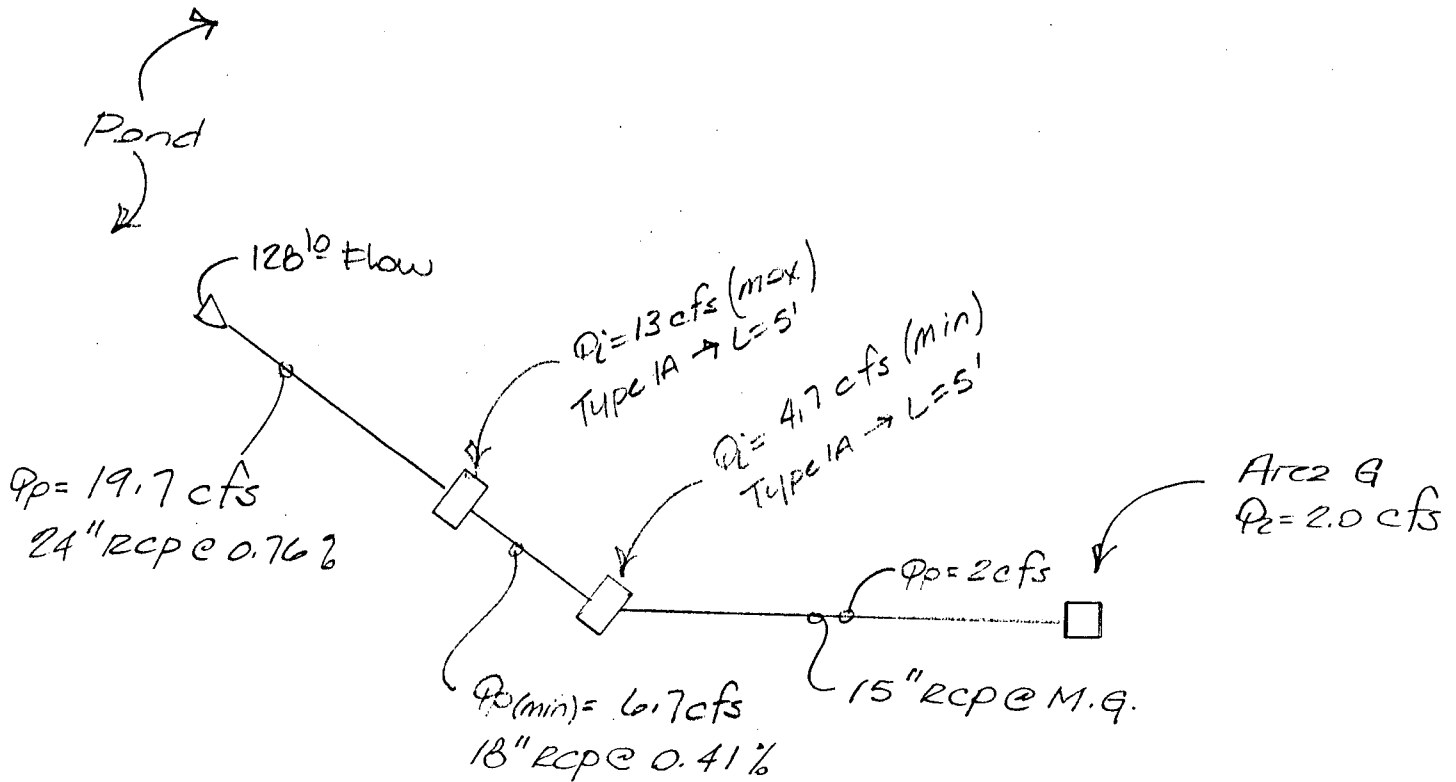
Area G → Backlot Areas

$DA = 2.16 \text{ AC}$

$Q_2 = (2.16 \times 3.83 \times 0.24) = 2.0 \text{ cfs}$

$Q_{100} = (2.16 \times 7.37 \times 0.51) = 8.1 \text{ cfs}$

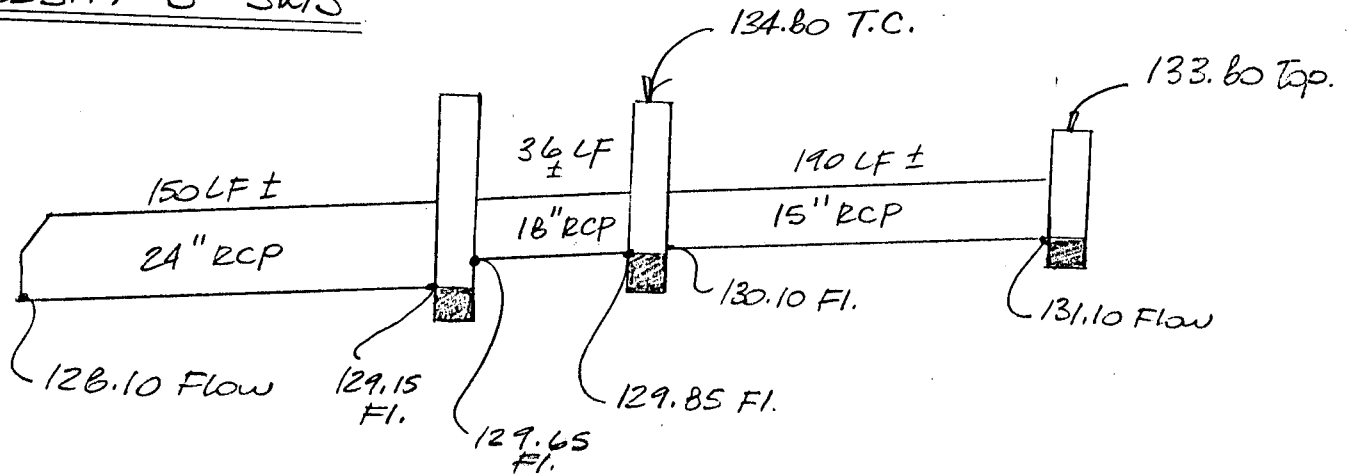
Size street sump for 100 yr storm, $Q_{100} = 17.7 \text{ cfs}$



BASIN B SUMP



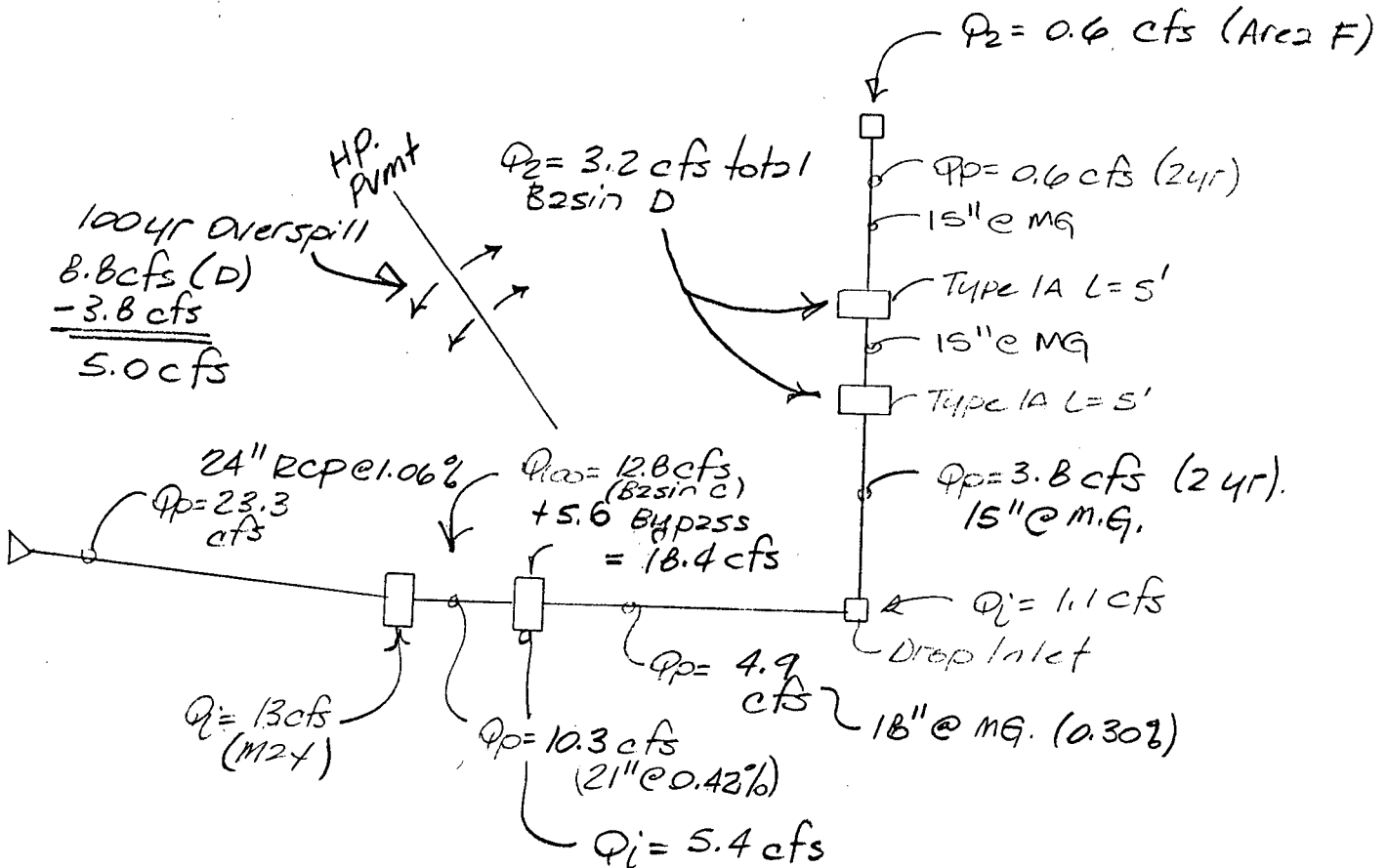
B2sin B skis



$$HGL = \frac{(134.80 - 0.55 - 0.5) - (128.10 + 2)}{150 + 36} = 1.96\% > 0.7\% \text{ O.K.}$$

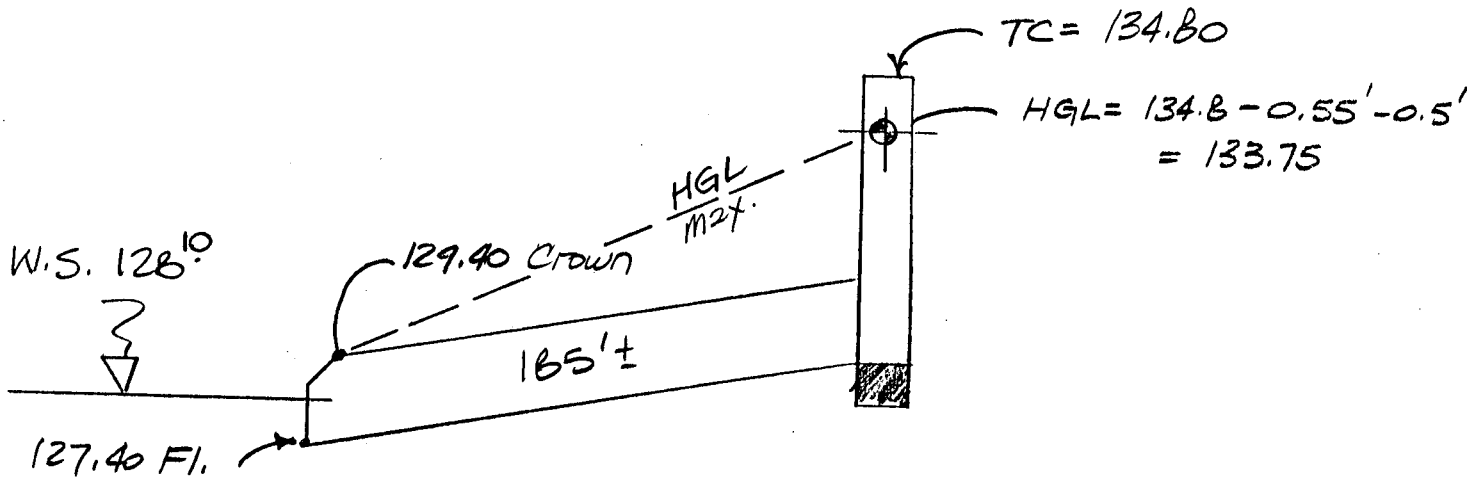
B2sin C skis

size for 100 yr. storm Basin C, 2 yr. storm for Basin D. Backlot for 2 yr.





Check Final Outlet Pipe from Basin C for Capacity.



Use Crown Elev. of Pipe 25 D.S. HGL (Conservative)

HGL Available = $\frac{133.75 - 129.40}{165} = 2.35\% > 1.06\%$ req for 24" Ø
O.K.

System Grades:

Due to Lack of Grade -
Set Flow Lines + 0.1 feet.

