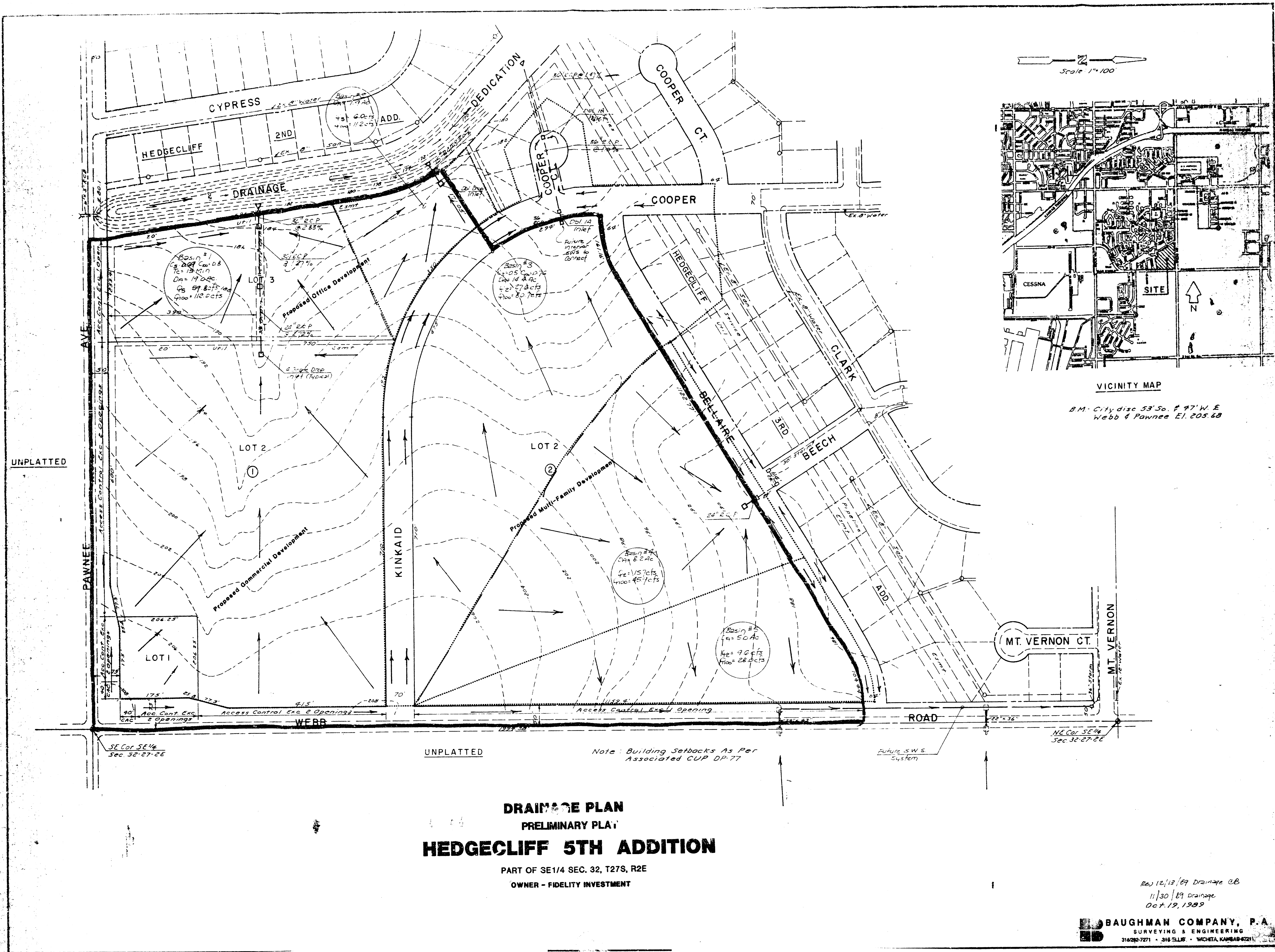


By CB 11/28/89 Page 1 of 4 BAUGHMAN COMPANY, P.A.

From "The Soil Survey of Sedgwick County" Soil Types include:

Ce → Hydro Group C
La → Hydro Group C
Rd → Hydro Group C

Majority of the ... group.

Basin	Use	Area	C2	C100	Q2	Q100
1	Commercial	19.0 Ac	0.63		49.5	112.0
2	Commercial	1.9 Ac	0.63		4.9	11.2
3	Multi Family	14.4 Ac	0.5	0.6	27.6	60.7
4	Multi Family	8.2 Ac	0.5	0.6	15.7	45.7
5	Multi Family	5.0 Ac	0.5		9.6	26.0

Q values Based on Time of Concentration of ... From City of Wichita Drainage ... Dj $i_2 = 3.83$"/hr $i_{100} = 7.37$"/hr.

BASIN 1 19.0 Ac $Q_2 = 49.5$ cfs $Q_{100} = 112.0$ cfs

Assume 100 yr Sump Condition ... Parking Area.

Assume Ponding Depth of 2.5' Available for Sump Inlets.

Orifice Flow Equation $Q = 0.6A\sqrt{2gh}$

City of Wichita Drop Inlet open Area:

Deeter # 2433 = 184 Sq. Inches = 1.28 ft^2

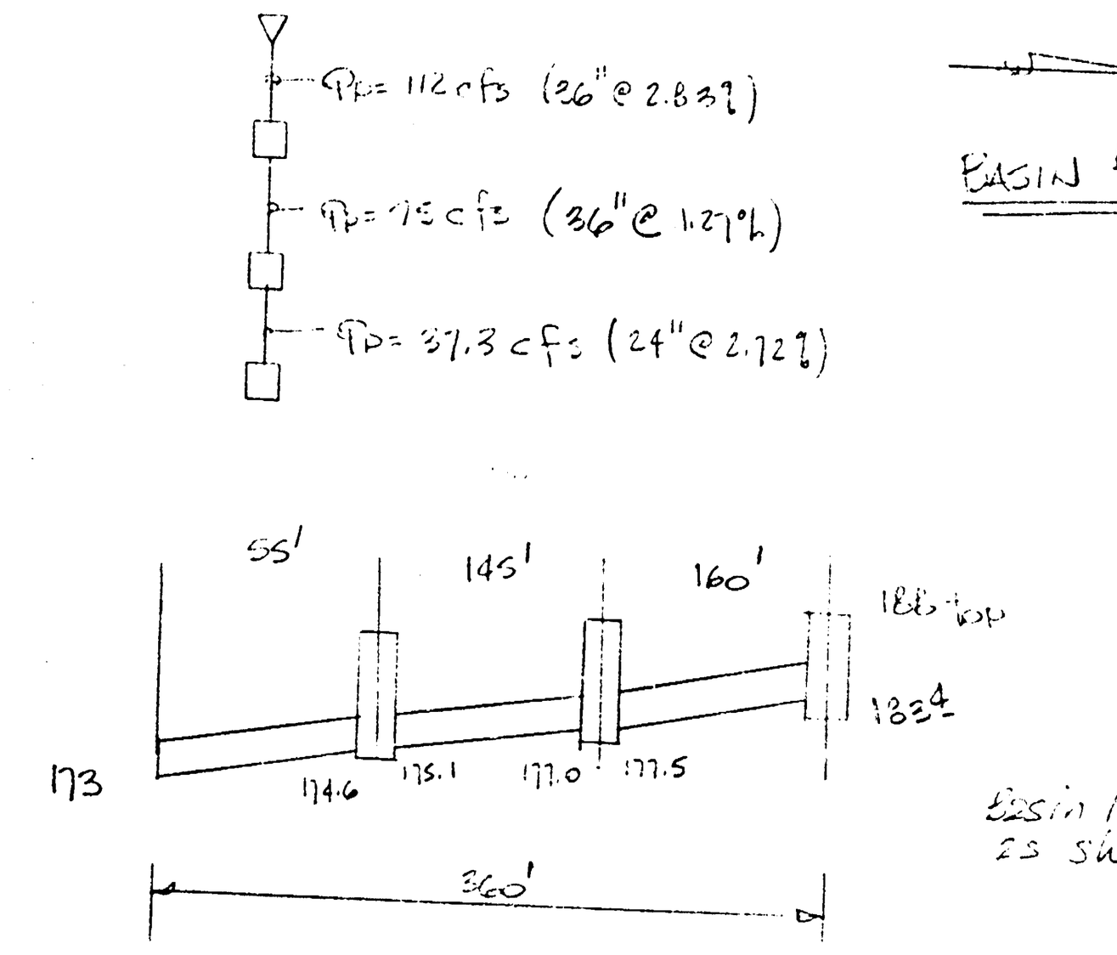
For 1 Inlet: $Q = 0.6(1.28\ ft^2)\sqrt{2(32.2)(2.5)}$

$Q = 9.7$ cfs

For 112 cfs: Need = 112/9.7 = 11.5 → 12 Inlets

Use 3 groups of 4 Inlets

By CB 11/28/89 Page 2 of 4 BAUGHMAN COMPANY, P.A.

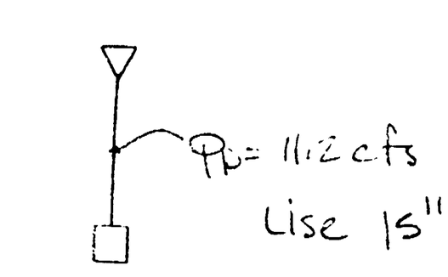


BASIN #1

Basin 1 will work as shown.

BASIN #2 DA = 1.9 Ac $Q_2 = 4.9$ cfs $Q_{100} = 11.2$ cfs

Use Double Drop Inlet ; $Q_p = 11.2$ cfs



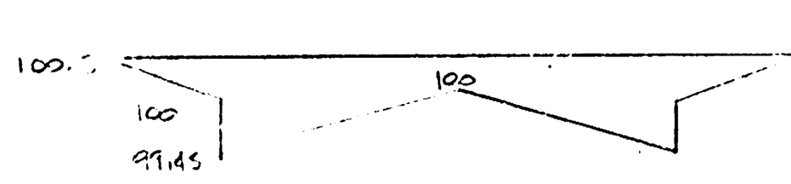
NOTE: Pipes Sized from Data In "Design Data 4" "Concrete Pipe Association"

By CB 11/28/89 Page 3 of 4 BAUGHMAN COMPANY, P.A.

BASIN # 3 Area = 14.4 Ac $Q_2 = 27.6$ cfs $Q_{100} = 60.7$ cfs

Flow thru Pavement Section - Check Street Capacity

Pvmt. Slope = 0.7% 40' Fc-Fc



@ T.C. Elev $A = \frac{1}{2}(0.55)(20) = 5.5\ ft^2$ (1/2 street)

WP = 20.55' $n = 0.016$ (Conc/Asph)

$V = 1.49/0.016\,(5.5/20.55)^{0.67}(0.007)^{1/2} = 3.65$ f/sec

$Q = VA = (3.65)(5.5) = 20.1$ cfs → Full Street = (20.1)(2)

$Q_{street_2} = 40.2$ cfs > 27.6 cfs O.K.

@ R/W Elev: $A = (15)(0.3)/2 + (\frac{0.85+0.3}{2})20 = 13.75\ ft^2$ (1/2 st.)

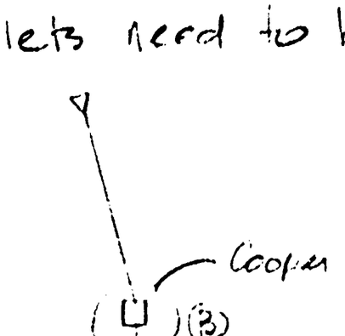
$A_{Total} = 27.5\ ft^2$

$wp = 2(15) + 2(0.55) + 40 = 71.1$ ft $n = 0.02$ (Grass; Asph; Conc)

$V = 1.49/0.02\,(27.5/71.1)^{0.67}(0.007)^{1/2} = 3.74$ f/sec

$Q = VA = (3.74)(27.5) = 102.9$ cfs > 60.7 cfs O.K.

Inlets need to be designed for 100 yr storm.



Both Inlets In Sump Conditions:

Inlet A 100 yr Sump Depth:

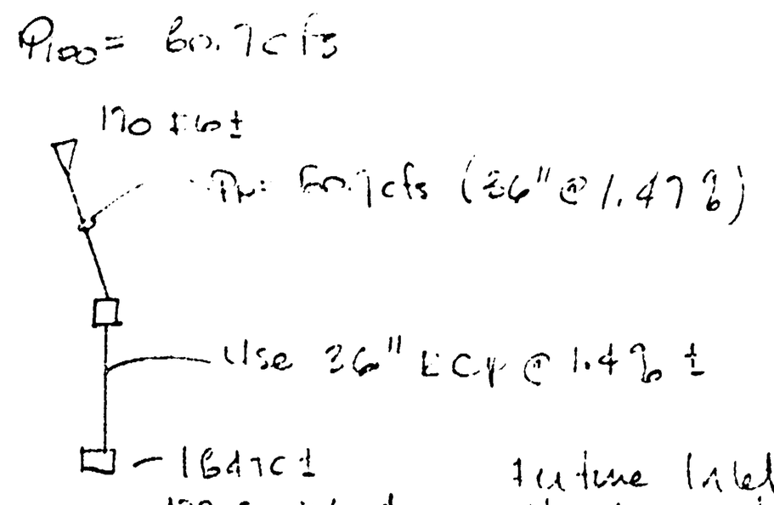
4" Depression + 0.55' + 0.3' = 1.18 feet

By CB 11/28/89 Page 4 of 4 BAUGHMAN COMPANY, P.A.

BASIN # 3 (Con't)

Use Dbl. Inlets @ Location A & B.

$Q_{100} = 60.7$ cfs



Future Inlets will be Installed Upstream to Utilize System Full Capacity.

BASIN #4 DA = 8.2 Ac $Q_2 = 15.7$ cfs $Q_{100} = 45.7$ cfs

NOTE: THIS AREA WAS ALREADY DESIGNED BY THE CITY TO DRAIN INTO THE EXISTING SWS ALONG BEECH!

BASIN #5 DA = 5.0 Ac $Q_2 = 9.6$ cfs $Q_{100} = 26$ cfs

Basin #5 will Drain Along Webb Road to A future SWS Extended South from Mt. Vernon